XEROX

XEROX
OFFICE SYSTEMS DIVISION

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8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

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CHAPTER 1   GENERAL DATA

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

1.1 HOW TO USE THIS SERVICE MANUAL

Service data for most 8000 Series devices is provided in a set of related manuals. The set includes several service manuals and a reference manual. The service manuals provide data normally required to repair the equipment. This manual provides specifications and installation information for printers and facsimile devises that connect to the net.

1.1.1   8000 SERIES MANUAL CONTENT

Each manual is divided into eight chapters. Some chapters provide only a reference to another manual. Content of chapters is described below.

Chapter 1. General Data
Reference Manual. This chapter provides information or instructions for manual usage, model configurations, product codes, specifications, Call Management procedures, matrix tag usage, tools and supplies lists, and general procedures.
Service Manuals. This chapter provides a Change Tag Index for appropriate devices.

Chapter 2. Installation/Removal
Reference Manual. This chapter provides procedures for installation and removal of equipment by a Service Representative.

Chapter 3. Repair Data
Service Manuals. This chapter provides procedures for removal, replacement, and adjustment of parts. Each procedure refers to related parts list (PL) in Chapter 4.

Chapter 4. Parts Identification
Service Manuals. This chapter provides exploded view illustrations of parts (and parts configuration) and a matching list of part descriptions. Each parts list refers to the related repair procedures in Chapter 3. Symbols used on parts illustrations are defined in Chapter 1 of the 8000 Series Reference Manual.

Chapter 5. Print/Display Quality
Service Manuals. In applicable manuals, this chapter provides definitions and samples of print or display quality. For faults not detected by software diagnostics, this chapter also defines electrical and mechanical faults, and their possible causes and corrective action.

Chapter 6. Troubleshooting
Service Manuals. In applicable service manuals, this chapter provides Level 01 Troubleshooting, Level 1 Checkout, MP Code List, Level 2 Check Charts, power distribution BSDs, and available diagnostics with instructions for usage.

Chapter 7. Plug/Jack List
Service Manuals. This chapter defines harness reference numbers, provides plug/jack location diagrams, shows wiring data with illustrations for each harness, and identifies

connectors by generic type. On wiring illustrations, letters are used for reference to connector diagrams.

Chapter 8. Principles of Operation
Reference Manual. This chapter provides a narrative discussion of the operation of 8000 Series devices. Block diagrams show functional areas and relationships within the 8000 Series configurations.

1.1.2   MANUAL SYMBOLS

Symbols used in service manuals are defined below.

**ENTIRE ILLUSTRATION AFFECTED
BY TAG NUMBER IN SYMBOL**

**SPECIFIC PART OR SECTION AFFECTED
BY TAG NUMBER IN SYMBOL**

**ENTIRE ILLUSTRATION NOT AFFECTED
BY TAG NUMBER IN SYMBOL**

**SPECIFIC PART OR SECTION NOT AFFECTED
BY TAG NUMBER IN SYMBOL**

8010-144

Figure 1-1 Tag Change Symbols

Tag change symbols appear on exploded view illustrations in Chapter 4 and on Block Schematic Diagrams in Chapter 6. The number within the symbol matches the tag number identified in the Change Tag Index in Chapter 1.

6	REMOVAL AND REPLACEMENT
■	ADJUSTMENT
■	REMOVAL, REPLACEMENT, AND ADJUSTMENT

8010-145

Figure 1-2 Repair Procedure Symbols

Repair procedure symbols appear on exploded view illustrations in Chapter 4, located near the applicable item number on the drawing. The number within the symbol (not shown in figure) matches the number of the repair procedure provided in Chapter 3.

1.3 B4	SIGNAL OUTPUT FLAG
1.3 B4	SIGNAL INPUT FLAG

8010-146

Figure 1-3 Block Schematic Symbols

Signal flags are used on Block Schematic Diagrams in Chapter 6. The numbers within the symbol identify the related BSD chain and the zone reference on the related BSD.

1.1.3   REVISION MARKS

Service manual revisions are provided by a change package or a new issue of applicable manuals. On the changed or added pages, a letter (at the bottom of the page) is used to identify level of revision. The following list defines methods used to identify the changes on each page.

Text	Change bar in left margin
Tables	Change bar at left side of the changed data
Changed Illustrations	Number (indicating level of revision) next to drawing number; change bar at left side of of drawing number
New Illustrations	Change bar at left side of drawing number
Page Changes	Letter following the page number i.e. 1-4C

When additional levels of revision are needed, identifiers for earlier revisions are taken out, and only new revisions are identified. Each revision includes a new title page containing a Revision Control List. The list provides page numbers where revisions have occurred as well as letters identifying the level of revision.

1.1.4   IDENTIFICATION OF SPECIFIC ITEMS

If parts or data are used only with a specific device, the applicable device is identified with one of the notations defined below. If no notation is provided, the part or data is used multinational and for all applicable devices.

RX   -- Rank Xerox

USO   -- United States Operations

USO/XC   -- United States Operations/Xerox Canada

XC   -- Xerox Canada

No notation -- Multinational

1.1.5   COMMENT SHEETS

Service Representatives can assist with creating accurate service documents by identifying errors or improvements. That information can be sent to Service Education personnel on a Comment Sheet, provided on the last page of each manual. Comment Sheets provide instructions for completion.

1.2 SPECIFICATIONS

The following specifications are for devices included in 8000 Series service manuals.

1.2.1   PRODUCT CODES AND CONFIGURATIONS

A list of product codes for the 8000 Series Printers and Facsimile devices are listed in table 1-1.

Table 1-1 8000 Series XSIS, and Versatec Products Codes

Hardware	USO/ XC	RX ECC	RX VDE	XSIS
Low Speed Electronic Printer				
B1 LSEP	876	- -	- -	M61
B2 LSEP	909	- -	- -	M62
220V LSEP (RX only)	- -	829	- -	- -
240V LSEP (RX only)	- -	830	- -	- -
P1 Printer	324	443	- -	- -
P1 APF	568	D08	- -	- -
P32 Printer	R86	- -	- -	- -
8000 Series Lazer CP	- -	- -	- -	- -
Telecopier 495-1	H26	H17	- -	- -

1.2.2 PHYSICAL SPECIFICATIONS

Low Speed Electronic Printer
Width   22 inches (56 cm)
Height   36 inches (91 cm)
Length   26 inches (66 cm)
Weight   262 lbs (118 kg)

P32 Printer
Width   12.6 inches (32cm)
Height   6.5 inches (16.5cm)
Length   20.8 inches (52.8cm)
Weight   27.5 lbs (12.5kg)

NS 8000 Laser CP
Width   21.5 inches (55cm)
Height   10.5 inches (27cm)
Length   27.5 inches (70cm)
Weight   140a lbs (63.5kg)

1.2.3 SPACE REQUIREMENTS

Figures 1-4, 1-5, and 1-6 show minimum space required for ventilation and for service of equipment. The illustrations do not provide an example of a normal installation.

1.2.4 ELECTRICAL SPECIFICATIONS (USO/XC)

Circuit conductors and ground conductors must be installed in accordance with local electrical requirements. A standard 15A, 2-pole, 3-wire grounded duplex receptacle is required for proper machine operation.

AC power is obtained from a grounded wall outlet. Voltages required at the wall outlet are 103 to 127 VAC line to neutral, 0 to 3 VAC neutral to ground, at 60 Hz.

Device	Current (Amperes)	Power (Watts)
LSEP Voltage	103 to 127 VAC (RMS), Single Phase, 60Hz, 11.49A (running)	
LSEP w/o heater	2.42A	278W
LSEP w/heater		
on standby	4.81A	553W
running	11.49A	1.32kW
P32		100W
NS 8000 Laser CP	15A	800W

1.2.5   ELECTRICAL SPECIFICATIONS (RX)

LSEP	193 to 264 VAC (RMS), Single
Voltage	Phase, 50Hz

1.2.6   ENVIRONMENTAL SPECIFICATIONS

Temperature Range
  50ºF to 90ºF (10ºC to 32ºC)*

Humidity Range

  LSEP: 15% to 65%, no condensation

Heat Dissipation (USO/XC only)

LSEP w/o heater	948 Btu/hr
LSEP w/heater	
on standby	1890 Btu/hr
running	4530Btu/hr

1.3 CALL MANAGEMENT

The Call Management procedures are to be performed during every service call. Call Management ensures that critical components of the equipment are operating correctly and within

specification. In a normal service territory, Call Management ensures the desired levels of service for 8000 Series products.

CAUTION
Be careful with the cleaning fluids in order to prevent damage to floors or fabrics.

During a service call, try not to cause an interference with normal activity. Keep a clean work area. Keep floors and other surfaces free of tools and parts. Take away cloths soaked with solvent, and discard cloths in an appropriate container.

1.3.1   OPTIONAL DEVICE CALL MANAGEMENT

1.   PERFORM CALL MANAGEMENT PROCEDURES ON ALL OPTIONAL DEVICES.
  a.   Refer to appropriate service manual for procedures for P1 printer or other optional devices.

5" (12.5cm)

XEROX

5"
(12.5cm)

1" Movable
9" Stationary

24" (64cm)

8000 Series Lazer CP Space Requirements
(Top View)

Figure 1-4   Space Requirements

2

CHAPTER 2   INSTALLATION/REMOVAL

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

INTRODUCTION

The following instructions apply to the equipment after shipping cartons and skids have been removed and the equipment is placed on location. Items to be installed with the devices are contained in installation materials packages or are locally sourced.

The information provided here is for installation and verification of devices that connect to the Ethernet facility to complete the Network. However, since the complete Ethernet Network installation is not totally your responsibility, the Pre-Install Checks are needed to assist in determining if the site is, indeed, ready for installation of devices. It also lists some of the job aids you will need in order to complete a successful installation.

Whether installing a new Network or expanding an existing Network, consideration should be given to the correct sequence for installation of the devices going on the Network. Refer to Figure 2-1, in the 8000 Series Reference Manual which illustrates the correct sequence for installation of all 8000 Series Products, and products compatible with the Ethernet Network (860 IPS w/Ethernet Comm, 873 CIU).

The procedures will give you a list of steps to follow for installing, a particular device. Also, in some cases, reference to procedures or source documentation is noted in parentheses for detailed steps on how to perform a major task. Once you have completed all the steps, you must return to the procedure for the device you were installing and continue.

2.1   PRE-INSTALL CHECKS

1.   ENSURE THAT EQUIPMENT IS READY FOR INSTALLATION.
2.   ENSURE THAT SYSTEMS ANALYST WILL BE AT CUSTOMER SITE TO INSTALL SOFTWARE.
3.   OBTAIN THE FOLLOWING INFORMATION FROM SYSTEM ADMINISTRATOR AND/OR SITE PLAN.
    a.   Where the devices to be installed are located.
    b.   What the devices are.

2.2   PRELIMINARY CHECKS

CAUTION
If any of the three voltage measurements is not as specified below, the cause must be corrected. Caution the customer not to connect the equipment to the wall receptacle, and advise that a licensed electrician must correct the wiring. Do not attempt to make the correction. If you later find the condition has not been corrected, inform your FSM in writing of the improper wiring.

1.   MEASURE AND VERIFY VOLTAGE AT WALL RECEPTACLE (FIGURE 2-2).
    a.   Select the proper voltage scale.
    b.   Measure voltage between AC hot and neutral.

AC NEUTRAL
(ACN)

AC HOT
(ACH)

EARTH
GROUND
(GND)

8010-001(2)
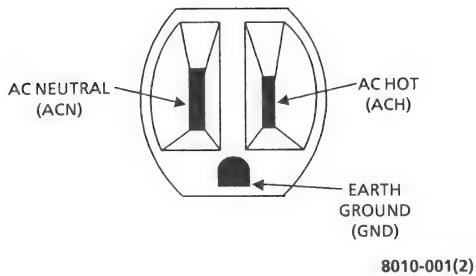
Figure 2-1   Wall Receptacle (USO/XC)

c.   Verify that meter indication is between 103 VAC and 127 VAC.
d.   Measure voltage between AC hot and ground (GND).
e.   Verify that meter indication is between 103 VAC and 127 VAC.
f.   Measure voltage between GND and neutral.
g.   Verify that meter indication is less than 3 VAC.

NOTE: Step 2 is for all RX only equipment.

2.   MEASURE AND VERIFY VOLTAGE AT WALL RECEPTACLE (FIGURE 2-3).
a.   Measure voltage between LIVE and NEUTRAL.
b.   Verify that voltage is within -15% to +6% of the nominal line voltage.
c.   Measure voltage between LIVE and GROUND.
d.   Verify that voltage is within -15% to +6% of the nominal line voltage.
e.   Measure voltage between NEUTRAL and GROUND.
f.   Verify that voltage is less than 3 VAC.

Figure 2-2   Wall Recepticle (RX)

8000-411

2.3 LOW SPEED ELECTRONIC PRINTER INSTALLATION

NOTE: If problems are detected with the printer during installation, place a Service Call for the 8040 Electronic Printer Service Representative. This <u>must</u> be done whenever the problems are first detected to save time and make it possible for both Service Representatives to be on site at the same time. However, keep in mind that the 8000 Processor must be installed, loaded with system software and Required Fonts before the 8040 Series Electronic Printer Service Representative can troubleshoot the printer.

1. <u>RX ONLY.</u> CHANGE THE TRANSFORMER TAPPING OR INSTALL A TRANSFORMER AS NECESSARY TO AGREE WITH THE NOMINAL LINE VOLTAGE.
    a. If the nominal line voltage is 120VAC, 190VAC, or 200VAC, TAG 248 (step up transformer) is required.
    b. If the nominal line voltage is 230VAC, 240VAC, or 250VAC, TAG 247 (step down transformer) is required.
    c. If the nominal line voltage is 220VAC, and the printer is fitted with a transformer, proceed to step 2 for instructions on disconnecting the transformer.
2. <u>RX ONLY.</u> DISCONNECT THE TRANSFORMER.
    a. Remove wire No. 49 from input line filter.
    b. Remove wire No. 1 from the 220VAC transformer terminal and connect it to the line filter terminal 3.
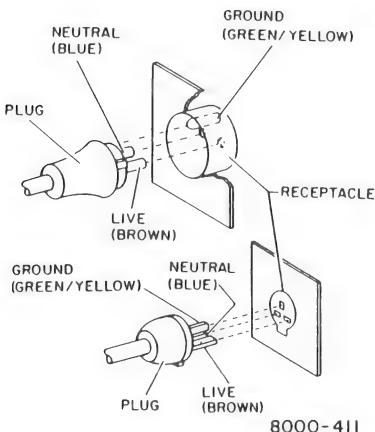
3. CHECK SPACE REQUIREMENTS (FIGURES 2-32, 2- 33).
4. REMOVE SHIPPING MATERIALS FROM PRINTER (FIGURE 2-33).
    a. Remove straps from printer.
    b. B2 only. Remove catch tray.
    c. Remove tape from display panel of printer control panel.
    d. Cut cable ties securing power cord to rear cover.

NOTE: Open front cover for access to safety bracket on side covers.

5. REMOVE REAR AND RIGHT SIDE COVERS (FIGURE 2-35).
6. REMOVE AND STORE RED SPACERS FROM SELF- LEVELING CASTER MECHANISM (FIGURE 2-36).

NOTE: Keep envelope from the installation kit.

7. REMOVE AND VERIFY CONTENTS OF INSTALLATION KIT (FIGURE 2-37).
    a. Remove installation kit from bottom of printer.

MINIMUM HEIGHT OFF THE FLOOR FOR OVERHANGING PROJECTIONS 135 CM (5 FT)

MINIMUM FLOOR SPACE 111.72 CM x 147.5 CM (44 IN)   (58 IN)

RAVN-1046
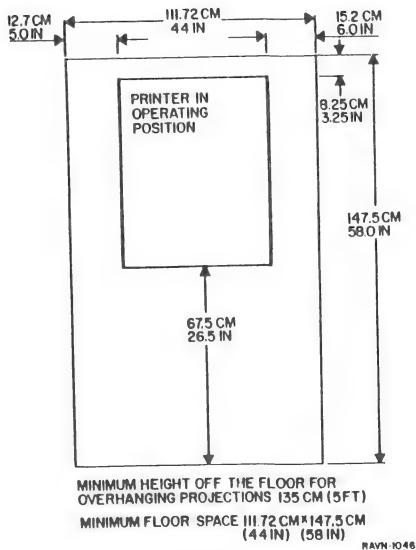
Figure 2-3   LSEP Space Requirements (B1 Only)
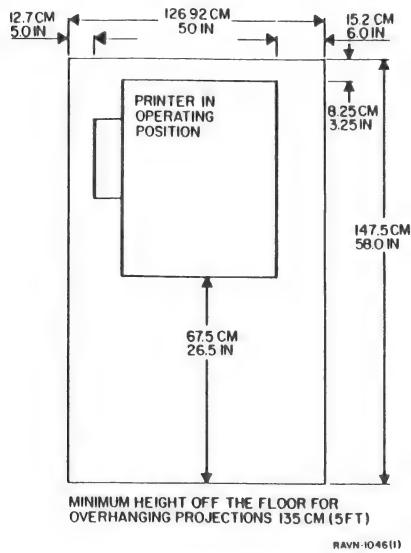
Figure 2-4   LSEP Space Requirements (B2 Only)

Figure 2-5   Removing the Shipping Materials
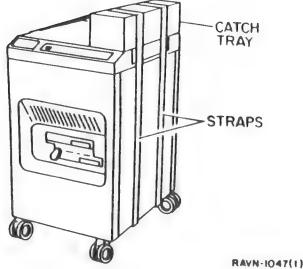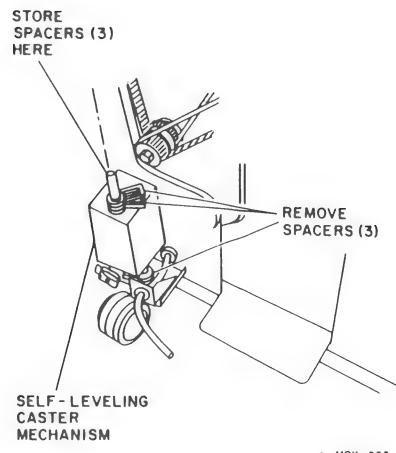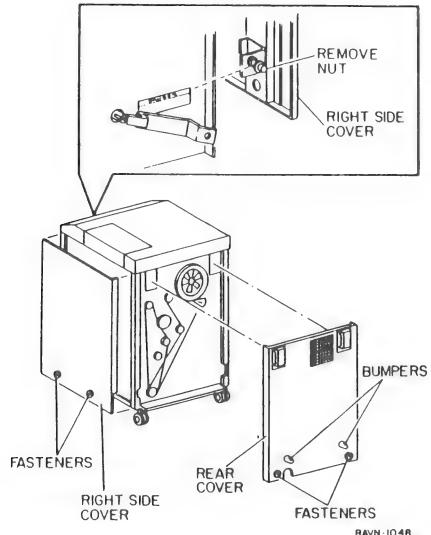
Figure 2-6 Removing Right Side and Rear Covers

Figure 2-7 Removal and Storage of Spacers

RAVN-1049
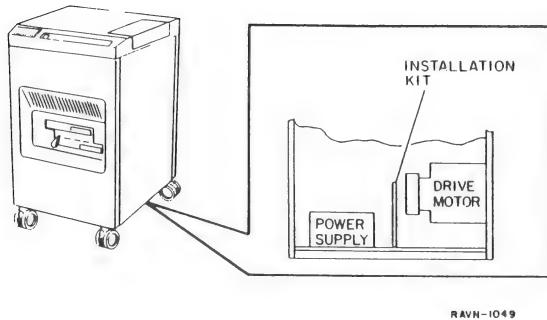
b. Check contents as follows:

PART NUMBER	DESCRIPTION	QUANTITY
600P2404	Dispatch Label	1
35P1736	Towels	1
600P4017	Service Representative Card Holder	1
8R181	Dusting Pouch	1
600P00293	Machine Record Book	1
611P20098	Machine Record Log	3
611P57667	Developer Warranty Form	1

8. RX ONLY. VERIFY THE CONTENTS OF SUPPLEMENTARY KIT (SUPPLIED BY RANK XEROX).

9. RX ONLY. VERIFY THE CONTENTS OF INITIAL SUPPLY KIT AS FOLLOWS:

PART NUMBER	DESCRIPTION	QUANTITY
3R90008	A4 Paper 80 GSM	1
8R90139	Dusting Pouch	1
6R90052	Toner Type H	4

10. CHECK THAT CONSUMABLES (PAPER AND TONER) WERE RECEIVED.

11. B2 ONLY. INSTALL CATCH TRAY.
   a. Remove catch tray and bracket from carton.
   b. Check that spring is on guide pin and pivot shaft is centered (Figure 2-38).
   c. Remove left side cover.

Figure 2-8   Removal of Installation Kit
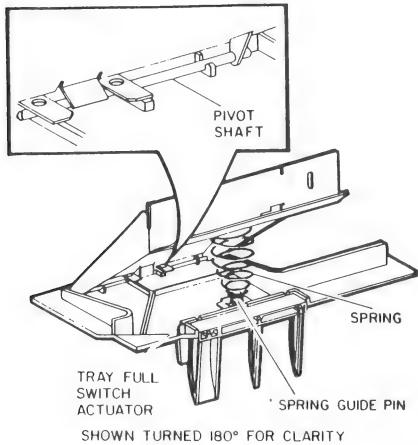
d.   Compress tray assembly; tilt tray downward and install tray (Figure 2-38).
e.   Install the two mounting screws.
f.   Replace left side cover.
g.   Install bracket as shown in Figure 2-38.

CAUTION
Do not allow envelope to block air flow on motor; damage to equipment may occur.

12.   REMOVE ANTI-STATIC BAG AND BLACK BAG FROM FRONT COVER. PLACE BOTH BAGS IN INSTALLATION KIT ENVELOPE IN BOTTOM OF PRINTER.
13.   PREPARE TO REMOVE DEVELOPER MODULE (FIGURE 2-39).
a.   B1 Only.   Loosen the two screws, and remove developer bracket.
b.   Loosen screw securing shipping bracket; turn bracket 90 degrees and tighten screw.
c.   Disconnect wire 27.
d.   B2 Only.   Disconnect P/J52.
d.   Disconnect hose.
e.   Release the developer module latch.

CAUTION
Do not lift developer module by using the dispenser assembly. To prevent damage, support the developer module from the bottom and ends when removing the developer module.

PIVOT SHAFT

SPRING

TRAY FULL SWITCH ACTUATOR

SPRING GUIDE PIN

SHOWN TURNED 180° FOR CLARITY

60-RA'N-1124

Figure 2-9   Catch Tray Assembly
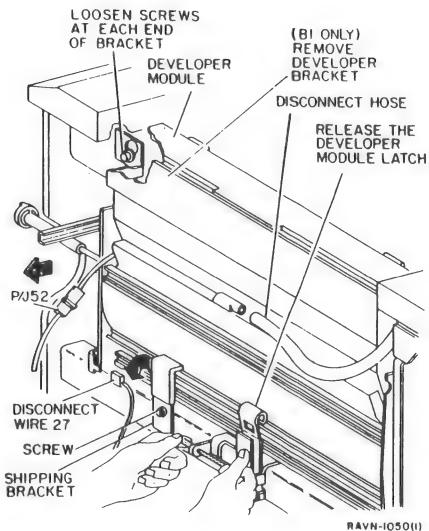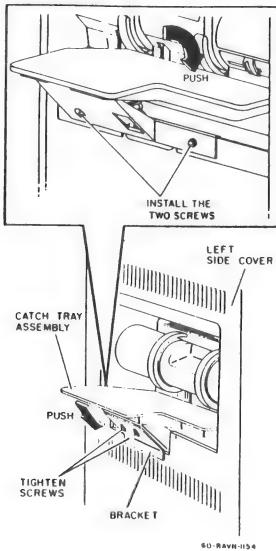
Figure 2-10   Installing Catch Tray Assembly

Figure 2-11   Preparing to Remove Developer Module

NOTE: Ensure that slot in developer drive is parallel to floor when removing the developer module.

14.   REMOVE DEVELOPER MODULE (FIGURE 2-40).

WARNING
Close and secure developer module latch after removing the developer module. Not securing the latch may cause an injury when performing service near right side of printer.

15.   SECURE DEVELOPER MODULE LATCH.

CAUTION
Be careful when tilting the developer module on towel. Tab for bias voltage wire may bend or move.

16.   PREPARE DEVELOPER MODULE (FIGURES 2-41, 2-42).
  a.   Place developer module on towel.
  b.   Remove white developer seal.
  c.   Place developer module in the position shown for leveling of developer

CAUTION
Never turn magnetic roll in direction opposite to normal operation. Turn only in direction shown.

NOTE: Do not install module if roll does not turn or there is excessive resistance to turn. Move developer in housing, and turn roll until there is no resistance.
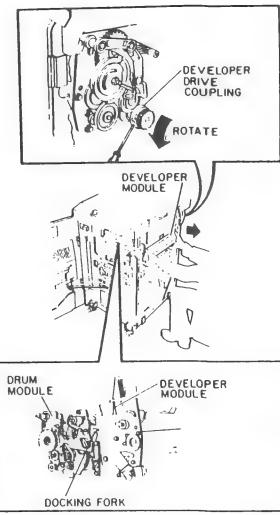
Figure 2-12   Removal of Developer Module

WHITE DEVELOPER
SEAL

TOWEL

RAVN-1052

CAUTION

NEVER TURN MAGNET ROLL IN A DIRECTION
OPPOSITE NORMAL OPERATION. TURN ONLY
IN DIRECTION SHOWN.

TURN MAGNETIC ROLL
BY TURNING
DEVELOPER DRIVE
COUPLING

90°

TOWEL

DEVELOPER
DRIVE
COUPLING

DEVELOPER
MODULE

60-RAVN-1103(1)
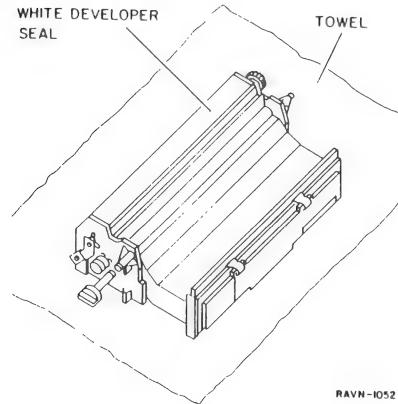
Figure 2-13   Removing the White Seal
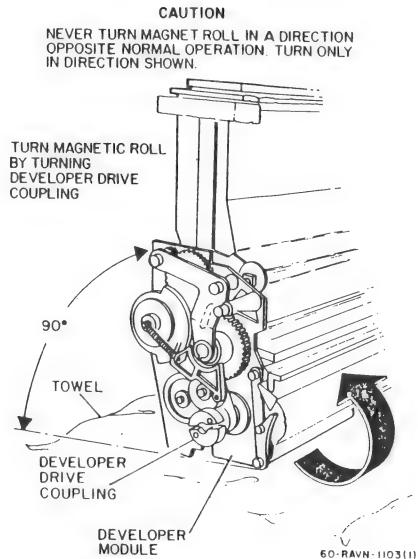
Figure 2-14   Leveling of Developer Module

d.   Use developer drive coupling to turn magnetic roll
for five revolutions to place an even layer of
developer on roll.

CAUTION
Do not lift developer module by using the dispenser assembly.
To prevent damage, support the developer module from bottom
and ends when installing the developer module .

NOTE: Ensure that slot in developer drive is parallel to floor when
installing the developer module.

17.   REPLACE DEVELOPER MODULE (FIGURE 2-43).

NOTE: Ensure that developer module is seated in docking fork on
drum module.

    a.   Replace developer module.
    b.   Secure developer module latch.
    c.   Connect hose.
    d.   Connect wire 27.
    e.   B2 only. Connect P/J52.
    f.   B1 only. Replace developer bracket with large holes
         on top.
18.   REMOVE TAPE FROM TONER DISPENSER ASSEMBLY AND
      ADD TONER.
19.   CHECK THAT TONER BAG IS UNDER CENTER OF TUBE,
      AND ENSURE THAT BAG IS NOT CLOSED AT NECK.
20.   SWITCH ON PRINTER POWER (FIGURE 2-44).
    a.   Connect AC power cord to wall outlet.
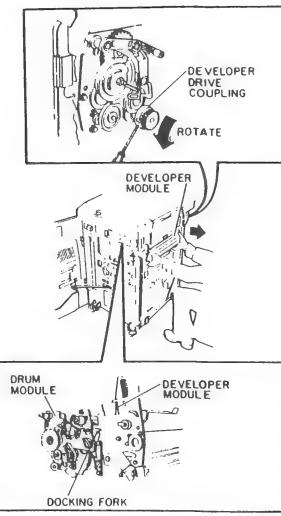
Figure 2-15   Replacing the Developer Module

POWER ON SWITCH

INTERLOCK

UPPER FUSER

60-RAVN-1059

Figure 2-16   Switching ON Printer Power
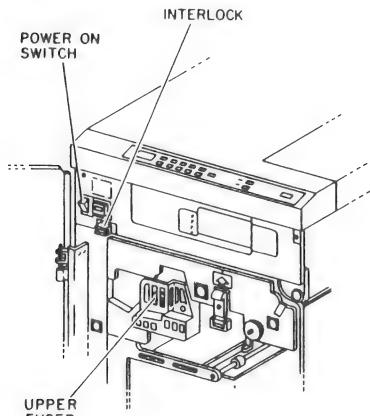
b.   Install interlock cheater.
   c.   Switch on printer power.
   d.   Check that the upper fuser heater is lit.
   e.   Check that *L1* flashes on display panel.
21.   PLACE PAPER IN UPPER AND LOWER PAPER TRAYS.

NOTE: Printer will require a warm up time of about five minutes before it can be operated.

22.   VERIFY THAT THE PRINTER IS OPERATING.
   a.   Ensure that *L1* is off.
   b.   Press OFF-LINE.
   c.   Press **1**, then press **TEST**; paper should feed from upper tray and bar pattern should be received at output tray.
   d.   Press **C** (clear).
   e.   Press **2**, then press **TEST**; paper should feed from lower tray and bar pattern should be received at output tray.
   f.   Check that the print counter operates.
   g.   Remove all paper from output tray.
23.   SWITCH OFF PRINTER POWER.
24   CONNECT PRINTER TO 8000 PROCESSOR.
   a.   Locate interface cable.
   b.   Connect the appropriate end to connector at rear of printer.
   c.   Connect the other end to connector (LSEP) on processor connector panel.
   d.   Switch on printer power.
   e.   Switch on processor power.

25. REPLACE REAR AND RIGHT SIDE COVERS.
26. CHECK PRINTER REGISTRATION.
    a. Type **print test pattern** then press **return**.
    b. Select *Alignment-Pattern.interpress* option from the menu.
    c. Type **3** then press **return**.
    d. Three prints of the alignment pattern will be printed. Check the prints for proper alignment. The "0" marks should align with the left edge and bottom edge of the paper. If the image is correct, go to step 28.

NOTE: The registration default values are 23 for the long axis and 8 for the short axis.

27. ADJUST PRINTER REGISTRATION.
    a. Type **set parameters** then press **return**.
    b. Select *Registration* option from the menu.
    c. The screen will display *Enter Registration Value for the Long Axis (10-43): 23*. Entering a value greater than 23 will move the image up the paper. Using the prints, determine and enter the long axis value, then press **return**.
    d. The screen will display *Enter Registration Value for the Short Axis (1-30): 8*. Entering a value greater than 8 will move the image to the right. Using the prints, determine and enter the short axis value, then press **return**.
    e. Type **print test pattern** then press **return**.

    f. Select *Alignment-Pattern.interpress* option from the menu.
    g. Type **3** then press **return**.
    h. Verify that the registration is correct. If the registration is not correct, repeat step 27.
28. ATTACH DISPATCH LABEL TO TOP COVER (FIGURE 2-45).
29. PREPARE MACHINE RECORDS.
    a. Prepare a record of installation on Machine Record Log.
    b. Fill in the IQR form.
    c. Make a record of any printer damage on Damage Control Card, and return the card.
    d. Prepare Developer Warranty Form, if necessary.
30. ENSURE THAT PRINTER IS IN THE POSITION WHERE IT WILL BE USED, THEN LOCK FRONT CASTERS (FIGURE 2-46).
    a. Open front door.
    b. Turn front casters until they are 90 degrees in relation to front frame.
    c. Lock front casters by pushing down on the levers.
31. CLEAN AREA AROUND PRINTER.
32. INSTALLATION OF LSEP PRINTER IS COMPLETE; RETURN TO PRINT SERVER INSTALLATION PROCEDURE.

DISPATCH
LABEL

RAVN-1118

LEVERS PUSH
DOWN TO LOCK

FRONT VIEW

FRONT COVER
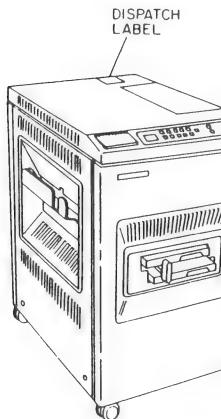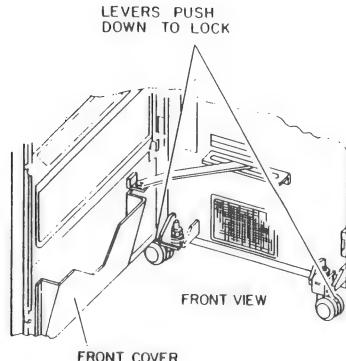
RAVN-1094(1)

Figure 2-17   Installing the Dispatch Label

Figure 2-18   Locking the Front Casters

2.4 P1 PRINTER INSTALLATION

NOTE: Interface cable for P1 Printer is packaged separately (P/N 73S80401); connect one end of cable to (PRINTER/DTB) connector at rear of processor connector panel. Connect the other end to the connector at rear of P1 Printer.

1. ENSURE THAT T22 PROCESSOR HAS TAG 5.
2. INSTALL P1 PRINTER.
   a. Refer to P1/1730 and 40 CPS Printers Service Manual.

2.5 P1 APF INSTALLATION

1. INSTALL AUTOMATIC PAPER FEEDER.
   a. Refer to Automatic Paper Feeder Service Manual.

2.6 P32 PRINTER INSTALLATION

1. PLACE THE PRINTER ON A FLAT SURFACE. CHECK THAT THE PAPER FEED SLOTS ARE CLEAR OF OBSTRUCTIONS.
2. REMOVE THE ADHESIVE STRIP SECURING THE PRINTER COVER, THE TRANSPARENT PROTECTIVE SHEET ON THE TOP OF THE COVER AND ANY CABLE TIES THAT MAY BE HOLDING THE AC POWER CORD.

3. OPEN THE TOP COVER AND FEED THE POWER CORD THROUGH THE REAR OF THE PRINTER. DO NOT PULL IT TIGHT. PRESS IT INTO THE CUTOUT PROVIDED IN THE LOWER REAR COVER. (Figure 2-20)
5. CONNECT THE PRINTER TO THE PROCESSOR (Figure 2-20).
   a. Switch the processor power OFF and disconnect the power cord from the wall outlet.
   b. Remove the processor rear cover.
   c. Remove any plastic inserts installed in the PRINTER DTB port by cutting off the flared heads. (Figure 2-19)
   d. Verify that the printer power is switched OFF and the power cord is disconnected from the wall outlet.
   e. Connect one end of the RS232 cable to the port named PRINTER DTB. (Figure 2-19)
   f. Install the processor rear cover.
   g. Connect the the opposite end of the RS232 cable to the serial port connector on the rear of the PRINT BUFFER.
   h. Connect the ribbon cable from the PRINT BUFFER to the rear of the PRINTER. (Figure 2-20)
   i. Set the external printer power switch to PRINTER to allow the PRINT BUFFER to be powered by the printer.
   j. Connect the processor power cord and switch ON power.
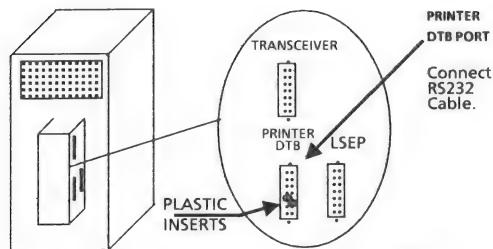
Figure 2-19   Remove Plastic Inserts from DTB Port
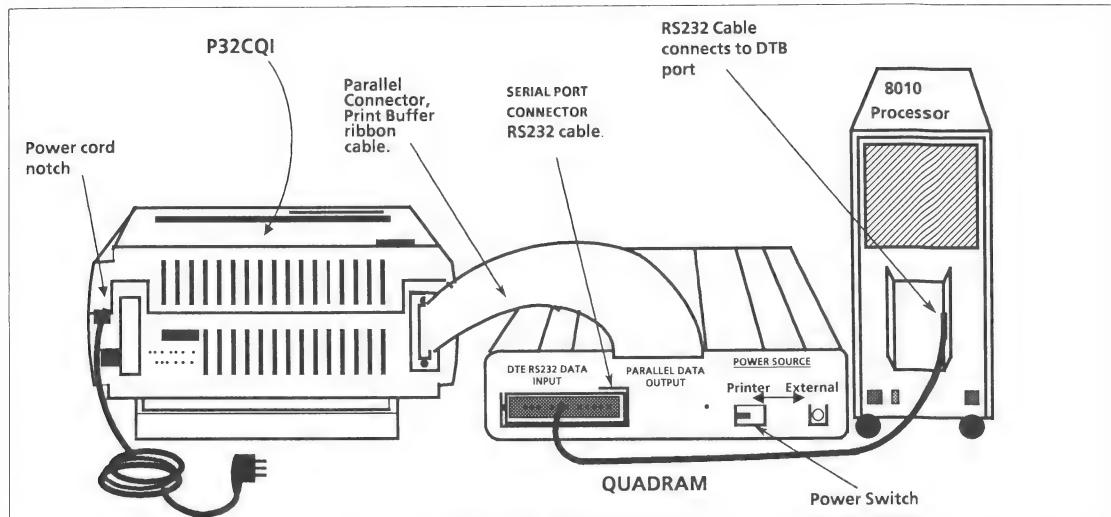
Figure 2-20   P32 Connections

2.7 PRINTER OPERATIONS

1. VERIFY THAT PRINTER POWER IS SWITCHED **OFF**.
2. PAPER INSERTION
    a. Refer to the P12CQI and P32CQI Matrix Printer Operators Guide.
3. RIBBON CARTRIDGE INSTALLATION
    a. Refer to the P12CQI and P32CQI Matrix Printer Operators Guide.
4. PRINT ATTRIBUTE SWITCHES
    a. Raise printer top cover.
    b. Refer to Table 2-1 for proper switch settings.
    c. Set the print attribute switches located on the top of the circuit boards under the top cover. (Figure 2-49)
    d. Close top cover.
5. PRINT A SELF TEST PATTERN
    a. Switch power ON while holding down the **FORM FEED** switch. This causes the printer to continually print a test pattern.
    b. Ensure that the paper and ribbon are feeding properly. If any problems occur, call PSR for printer service.
    c. Examine the self test printout for even, clear printing.
    d. Press **ON LINE** switch to stop the self test print.

Switch #	Function	P32 Setting
S01	DISABLE DOWN LOADING	ON
S02	CHARACTER SET SELECTION	OFF
S03	(IBM CHARACTER SET)	OFF
S04		OFF
S05	IBM GRAPHIC PRINTER	ON
S06	IBM CHARACTER SET 1	OFF
S07	MUST ALWAYS BE ON	ON
S08	LINE FEED WITH CARRIAGE RETURN	ON
S09	PAPER 11" LENGTH **NOTE:** Option **9** is optional when attached to an 8010 workstation.	OFF
S10	8 LPI (LINES PER INCH)	ON
S11	PRINT DESNITY (10	OFF
S12	CHARACTERS PER INCH	OFF

Table 2-1 Print Attribute Switch Settings

NOTE: S05 thru S12
is numbered S1thru
S8 on the switch.

Rear

S01 - S04   S05 - S12

POWER
S W I T C H
bottom of
printer

control
console

Front

(Top View)
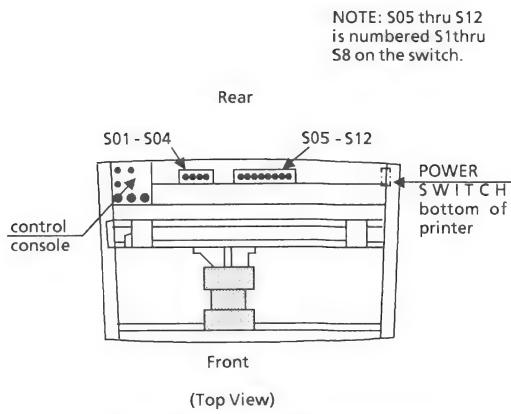
Figure 2-21   P32 Print Attribute Switches

2.8 PRINT BUFFER MEMORY TEST

1. TO SET INTERNAL JUMPERS ON THE PRINT BUFFER UNIT,
    PERFORM THE FOLLOWING PROCEDURES:
    a. Switch OFF printer power.
    b. Using a screwdriver, remove the back cover of the
        print buffer unit.
    c. Remove the printed circuit board from the casing
        and position it component side up. The end with the
        ribbon cable should be on the right with the
        term "Microfazer" in the lower right hand corner.
        (Figure 2-22).
    d. Locate the Interface Baud Rate pins on the circuit
        board. (Figure 2-22).
    e. Place the jumper across the pair of side-by-side pins
        for the 9600 baud rate.
    f. Locate the Handshaking Pins (P1) chip, on the circuit
        board. (Figure 2-22).
    g. Place the jumper across the pair of side-by-side pins
        for the RTS (request to send) and TS (data terminal
        ready) "handshaking" signal.
    h. Reinstall the back panel of the Print Buffer.
    i. Switch ON printer power.
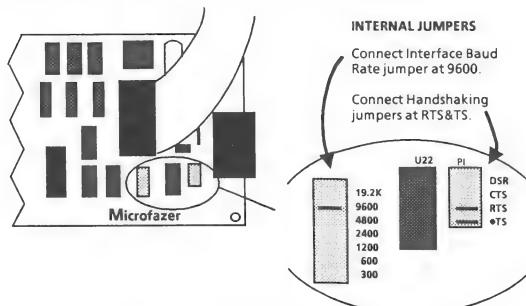
Figure 2-22   Microfazer Internal Jumpers

2 PRESS **RESET BUTTON** ON THE FRONT OF THE QUADRAM MICROFAZER BUFFER TO INITIALIZE THE PRINT BUFFER AND TO CLEAR ITS MEMORY. THE **READY LED** AND **COPY LED** INDICATORS SHOULD BE ON. THE **ERROR LED** INDICATOR SHOULD BE OFF.

3 TO INITIATE MEMORY TEST; PRESS AND HOLD **RESET,** PUSH **PAUSE/COPY,** RELEASE **RESET,** WAIT 1 SECOND AND RELEASE **PAUSE/COPY**.THE STATUS LIGHT WILL BE **OFF,** INDICATING THE MEMORY TEST IS BEING PERFORMED. THE TEST TAKES 4 - 5 SECONDS.

   a. The test checks the data line D, the address lines A and the memory M.

   b. Results of the test are printed through the printer showing the amount of installed memory.
       For example, with 16K installed the printout will read 16K.

   c. When errors are found , the printout will contain a letter D, A or M and one or more digits 0-7 indicating the faulty bit positions.
       For example, M 1 3 4   means there are memory errors in bit positions 1,3,4.

   d. If not error free, have the customer order the Quadram Microfazer Buffer through the supplies system and customer install the Quadram Microfazer Buffer. The Quadram Buffer is a 90 day warranty item.

| 2.8.1 | PRINTING SYSTEM OPERATION |

1. HAVE SYSTEM ADMINISTRATOR (S.A.) SEND A JOB THROUGH THE HOST SYSTEM.

2. IF NO PROBLEMS OCCUR, INSTALLATION IS COMPLETE; IF THERE ARE PROBLEMS PERFORM THE FOLLOWING STEPS.

3. PRINTER DIAGNOSTICS.

    a. Load diagnostic floppy and boot from 005.
    b. When ALAG reaches 316, press the stop key.
    c. MP will display 0399.
    d. Type **P** for printer test.
    e. MP goes to 0899.
    f. Type **S23** and return.
    g. Workstation diagnostics should be printed on the Draft Printer.

4. IF PRINTER DIAGNOSTICS RUN SUCCESSFULLY, HAVE SYSTEM ADMINISTRATOR CHECK THE OPERATIONAL SOFTWARE.

5. IF PRINTER DIAGNOSTICS DO NOT RUN SUCCESSFULLY, REFER TO LEVEL 1 CHECKOUT, TABLE 6-1 FAULT ISOLATION.

2.9 NS 8000 LAZER CP INSTALLATION

1. PERFORM PRE-INSTALLATION CHECKS (2.1)
2. PERFORM PRELIMINARY CHECKS (2.2)
3. REMOVE AND VERIFY THE CONTENTS OF THE INSTALLATION KIT.
   a. Check the contents as follows:

Part Number	Description	Quantity
117P8929	Power Cord (US/XC Only)	1
	5 Wire Interface Cable	1
	User Manual	1
6R139	Dry Imager	1

4. CHECK THE PRINTER FOR DAMAGE.
5. CHECK THAT THE PRINTER IS SITTING ON A FLAT LEVEL SURFACE.
6. ADD DRY IMAGER.
   a. Lift the dry imager door cover.
   b. Remove the tape from the cap.
   c. Follow the instructions on the door cover to add dry imager.
7. INSTALL THE OUTPUT TRAY.
8. CONNECT THE POWER CORD.
9. VERIFY THAT THE PRINTER IS OPERATING PROPERLY AND THAT IT IS OFF-LINE.
   a. Switch ON printer power.
   b. Press OFF-LINE.

   c. The Ready lamp should be lit. If not, Power On diagnostics have failed.and a failure code will appear on the control console. Call Work Support to have the proper Service Representative dispatched.
10. SWITCH OFF PRINTER POWER.
11. CONNECT THE PRINTER TO THE PRINT SERVER.
    a. Switch OFF the Print Server Power.
    b. Remove the rear cover of the print server.
    c. Locate the interface cable and connect the appropriate end to the connector at the rear of the printer.
    d. Connect the opposite end of the connector to the print server connector panel LSEP port.
    e. Replace the print server rear cover.
    f. Switch ON the Print Server power.
12. VERIFY PRINTER OPERATION.
    a. Press and hold Last Page and Reset and switch ON printer power. The control panel will display a number with a letter following it when the verification mode has been entered.
    b. Release the Last Page and Reset switches.
    c. Enter 28 by pressing and releasing Last Page until the first digit (2) is displayed. Then press and release Reset until the second digit (8) appears.
    d. Press OFF-LINE. A flashing red indicator will be displayed on the control panel.
    e. Enter 99 by pressing and releasing Last Page until a (9) appears and press and released Reset until the second digit (9) appears.

    f.   Press **OFF-LINE**. A print will be produced that is one half blank and the other half contains horizontal lines parallel with the short edge of the paper. This verifies the basic functions of the printer.

    g.   Press **OFF-LINE** to stop printing. Approximately three prints will be produced after you press OFF-LINE.

    h.   Switch OFF printer power. Switch ON printer power to return to READY mode.

    i.   If the printer verification does not function, call the Xerox Technical Support Center for assistance.

13. VERIFY THAT THE PRINTER IS OPERATIONAL FROM THE SERVER.

    a.   Logon at the server terminal and enter the Print Service mode.

    b.   Type print test pattern and press return.

    c.   Type 1 and press return.

    d.   Type 1 and press return.

    e.   After a few moments, a CAM test pattern will arrive at the output tray.

14. IF A PROBLEM OCCURS, REFER TO CH. 6, TROUBLESHOOTING.

3

CHAPTER 3   REPAIR DATA

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

REFER TO THE APPROPRIATE SERVICE MANUAL

CHAPTER 4   PARTS IDENTIFICATION

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

REFER TO THE APPROPRIATE SERVICE MANUAL

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CHAPTER 5   PRINT/DISPLAY QUALITY

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

REFER TO THE APPROPRIATE SERVICE MANUAL

CHAPTER 6   TROUBLESHOOTING

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

6

NS 8000 LASER CP TROUBLESHOOTING

Troubleshooting between the server and the NS 8000 Laser CP may not always be an easy task. Therefore, we have included a Troubleshooting Flow Chart, Status Code Charts, Signal Isolation Charts, and other aids to assist you in isolating the problem.

Comprehensive sets of stand alone directive diagnostic tests have been designed to greatly ease the resolution of user problems, the tasks of the PSR and associated service personnel. One set is integral to the IOT (input/output terminal) in the **NS 8000 Laser CP** configuration, a second set resides in the Print Server. The diagnostic modes available are, *Automatic* (self-tests) and *Service Representative Selectable*. Each category is described briefly below:

● **AUTOMATIC**
Self test diagnostics, which are executed at power-up, reside in the IOT firmware. Sub-system designation numbers are displayed on the operator panel momentarily as the subsystems are sequentially tested, except for the IOT sub-system test which is designated by a blank display. In the event a sub-system test fails to meet the verification criteria, testing halts and the failed sub-system number is left displayed with the **warning chime sounding**.

The displayed error codes will be used to communicate to service what component failed so the correct FRU will accompany the service rep to the customer site.

● **SERVICE REPRESENTATIVE SELECTABLE FUNCTIONAL TESTS**
The tests which are CSR accessible are:

Jam Codes which become visible on the control panel display when depressing Last Page.

Printer Verification Test 28 (6.01).

NS 8000 LASER CP DIAGNOSTIC TESTS

The 8000 Network Server Print Service provides unique implementation of Laser CP diagnostic tests 36 thru 47. In order for these tests to function, the 8000 Network Server Print Service must be operational; Verify with the Customer System Administrator.

All D and L codes will prompt a service call.

Four graphic diagnostic symbols will be displayed on the control panel and will require operator action for the following:
● Paper misfeed
● Low toner
● Add paper
● Output tray or sequencer full

On the following page is a troubleshooting flow chart to assist you in isolating problems.
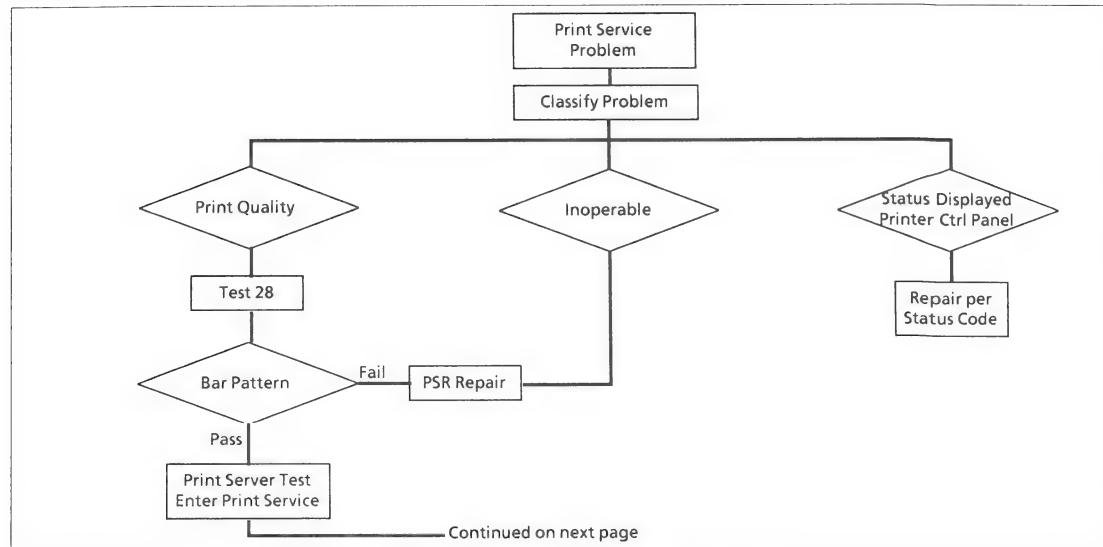
Figure 6-1 8000 Series Lazer CP Troubleshooting Flow Chart
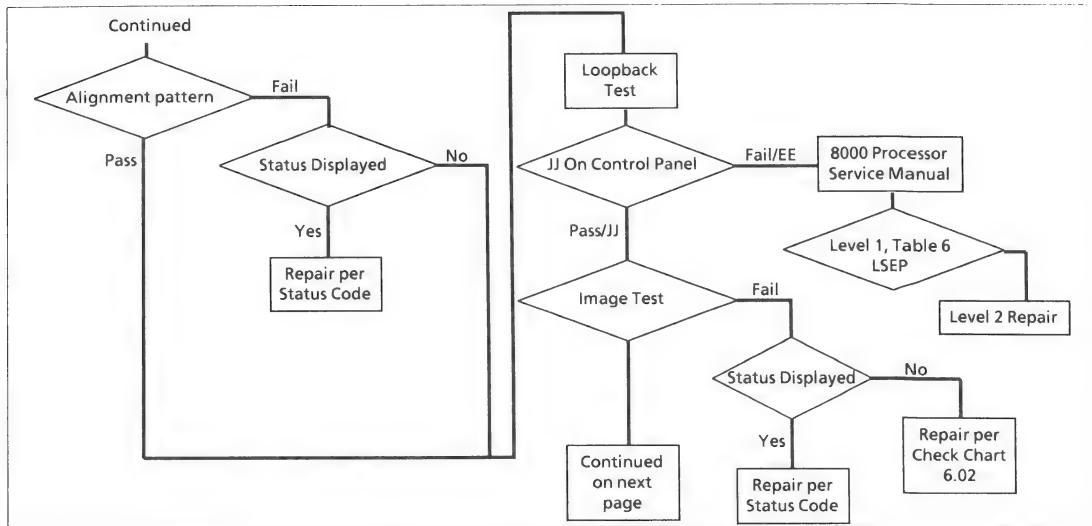
Figure 6-2   8000 Series Lazer CP Troubleshooting Flow Chart Continued

Continued

Print Problem
Still exists

No

Restore Print
Service

Yes

Call For
Assistance
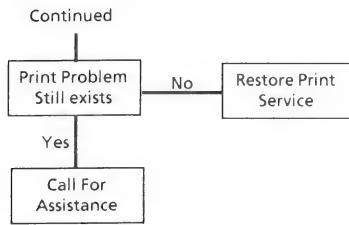
Figure 6-3   8000 Series Lazer CP Troubleshooting Flow Chart Continued

CODE	FRU/PROCEDURE
	Power up Diagnostics failure
Blank	Call for printer service.
d8	Call for printer service.
d9	Call for printer service.
	Power up Diagnostics have passed
FE	FE is a file error and requires the System Administrator assistance for loading the required fonts.
P1,P2,P3	Run Test 28 (6.01). Check the printer cable connections. Perform Interface Signal Check (6.02). Enter Start Diagnostics and run the 8000 Print Service Image Test.
	Printer cable.
	Printer. (Call for Service)
P4	Enter Start Diagnostics and run the C-Video loopback test with the host connected. If the test fails, disconnect the printer cable at the print server and connect the universal loopback tool to the print server. Run the LSEP Port Test. If the test is good, re-connect the cable to the print server. Disconnect the cable from the printer and connect the universal loopback tool into the printer end of the cable and run LSEP Port Test. If the test fails, replace the cable. If the test is good, call for printer service.
	Printer cable.
	Printer. (Call for Service)
P5	This code indicates that the host has detected an error in the sequence of status information from the Laser CP. Reboot the printer (power OFF then ON) and /or the print server to recover from this status code.

COPY QUALITY DEFFECT	PROCEDURE
Blank copy, white streaks, deletions or bad gray dusting	Run IMAGE TEST from the print server. JJ will appear on the printer control panel if the test passes. If the test fails, a failure code F1 thru F8 will appear. Perform procedure 6.02, Interface Signal Checks.

6.01   PRINTER VERIFICATION TEST 28

1. ENTER PRINTER VERIFICATION MODE.
   a. Switch OFF printer power.
   b. Press and hold LAST PAGE and RESET on the control panel while switching power ON. Release LAST PAGE and RESET.
   c. Enter 28 by pressing and releasing LAST PAGE until a 2 appears, then press and release RESET until the 8 appears.
   d. Press OFF-LINE. A flashing red indicator will be displayed on the control panel.
   e. Enter 99 by pressing and releasing LAST PAGE until the first 9 appears, then press and release RESET until the second 9 appears.
   f. Press OFF-LINE. After a few moments the printer will produce a test pattern with half a page of horizontal lines and the other half blank. This verifies the basic functions of the printer.
   g. Switch OFF printer power. Switch ON printer power to return to READY mode.

6.02   INTERFACE SIGNAL CHECKS

1. CHECK THE INTERFACE SIGNALS.
   a. Switch OFF printer power.
   b. Remove the five wire interface cable from the back of the printer and install the Universal Loopback tool and five wire interface cable. (Figure 6-5)

   c. Locate pins 1 and 2 (Video Clock) and insert the pin extender tool 600T1180. (Figure 6-6)
   d. Using the EZ-hook meter leads, connect the positive meter lead to pin 1 and the negative to pin 2.
   e. Switch ON printer power.
   f. Ask the System Administrator to logon at the print server.

NOTE: Voltage fluctuation is slight and sometimes hard to detect.

   g. Start Diagnostics. Run Image Test. With the test running the voltage should be -.16VDC and -.85VDC when it is not running. If the Video Clock signal is not correct, call for printer service.
   h. Locate pins 7 and 8 (Line Sync) and insert the pin extender.
   i. Connect the positive lead to pin 7 and the negative lead to pin 8.
   j. Run Image Test. In the run condition the voltage should be +.62VDC and when not running should be -.86VDC. If the line sync signal is not correct, call for printer service.
   k. Locate pins 4 and 5 and insert the pin extender.
   l. Connect the positive lead to pin 4 and the negative to pin 5.
   m. Run Image Test. In the run condition the voltage should be -.22VDC and when not running should be -.81VDC. If the Video Data signal is not correct, the problem is in the print server.

n. Switch OFF printer power and disconnect the loopback tool.

o. Connect the five wire interface cable to the back of the printer and restore the printer to the READY mode.

Table 6-1 Intrerface Signal Voltages			
Signal name	Pins	Standby voltage	Running voltage
Video clock	1 pos 2 neg	-.85VDC	-.16VDC
Line sync	7 pos 8 neg	-.86VDC	+ .62VDC
Video data	4 pos 5 neg	-.81VDC	-.22VDC
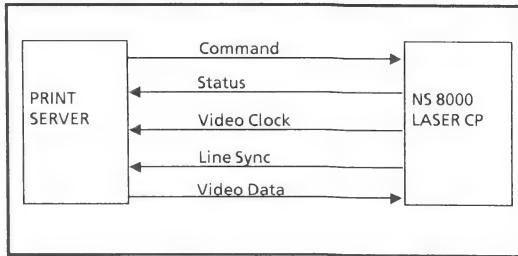
Figure 6-4   Signal Interface Flow Chart

NS 8000 Laser CP

P 57

Pin 1

Pin 14

Pin 13

Pin 25

Exploded View

Universal Loopback Tool

Interface Cable
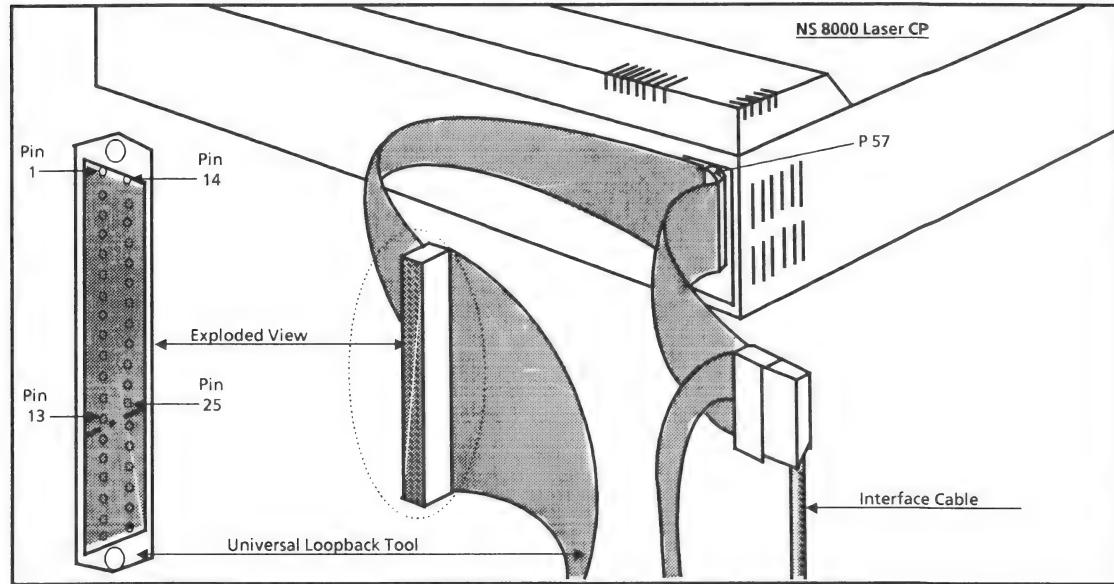
Figure 6-5   Interface Signal Check Set-Up
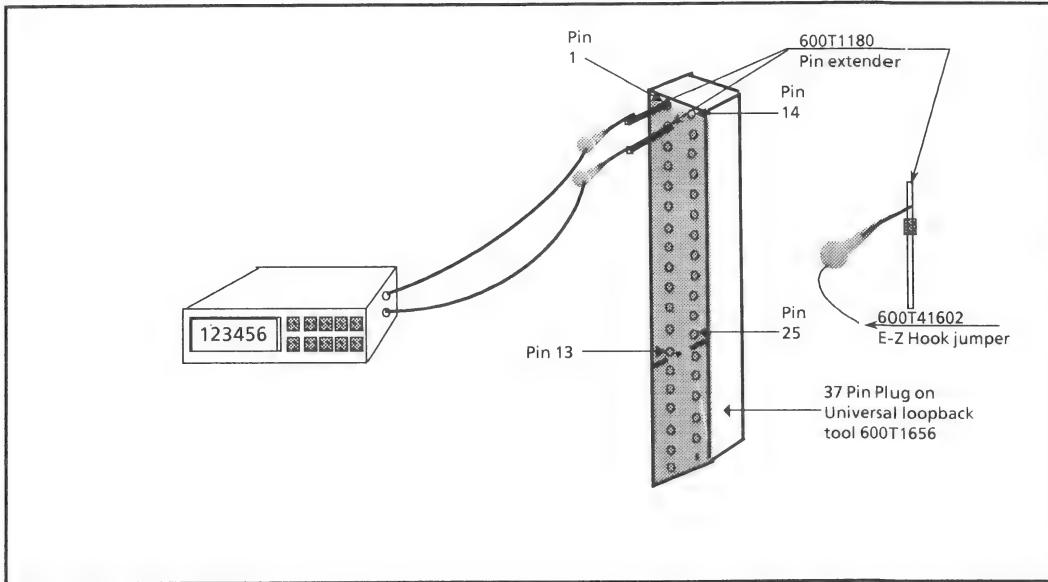
Figure 6-6   Interface Signal Check Set-Up (Continued)

CHAPTER 7   GENERAL DATA

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

REFER TO THE APPROPRIATE SERVICE MANUAL

CHAPTER 8   PRINCIPLES OF OPERATION

8000 SERIES PRINTERS AND FACSIMILE REFERENCE MANUAL

8

8.1 LSEP INTERFACE

The design of the 8000 Processor allows for control of a Low Speed Electronic Printer or a Large Format Display, but they cannot co-exist on the same processor at the same time. The reason for this is that the LSEP and LF Display both use the low 64K of memory as a "bitmap"; i.e., the bit patterns in memory are a representation of a printed page or the display screen.

The LSEP interface is supported by the central processor and the I/O processor. The I/O processor uses an 8251 Universal Asynchronous Receiver Transmitter (UART) for control and status signals. The UART provides a serial interface to the LSEP, and parallel interface to the I/O processor.

The communication between the central processor and the LSEP is for the synchronization of information to be printed. The LSEP supplies the Video Clock and Line Sync signals to the processor. Data is transferred on the X bus by the central processor from the low 64K of memory to the OPT PWA. The LSEP interface converts the data from parallel to serial in two shift registers. The shift registers are individually loaded and unloaded under control of the Video Clock signal. As one register is loaded, the other is shifted out to the printer. This "flip-flop" arrangement ensures a continuous flow of video data to the LSEP.

8.2 P32 CQI

The P32CQI (Correspondence Quality IBM compatible) is a 9 wire dot matrix printer capable of printing both text and graphics including all, star fonts. Both single sheet and continuous form paper may be used. A diagnostic routine is accessed when the Form Feed switch is held down while switching power ON, for the purpose of self testing, to expedite fault isolation. This self test (internally generated) creates a test pattern that aids in diagnosing a problem.

The P32CQI printers are microprocessor controlled. The microprocessor, mounted on the printer's circuit board with its Data Buffer, EPROM, and Read Only Program Memory, exchanges data and control commands through its Control Data and Address Bus as follows:

- With its I/O Ports it exchanges:

    a. Operator-Initiated control panel switch commands
    b. Control of the LED's on the control panel
    c. Attribute switch setting data (when power is applied)
    d. Paper status from the paper switch
    e. Carriage home position information from the Home position sensor

In addition, with its interface logic it exchanges commands and data from the host system.

The microprocessor translates these signals, notifies the operator or host as required (by an indicator on the control panel or a signal on the interface), directs the flow of data through the printer, and causes corresponding movement of the paper motor, print carriage motor, and print needles.

A logic diagram of the printer is shown in Figure 8-1.
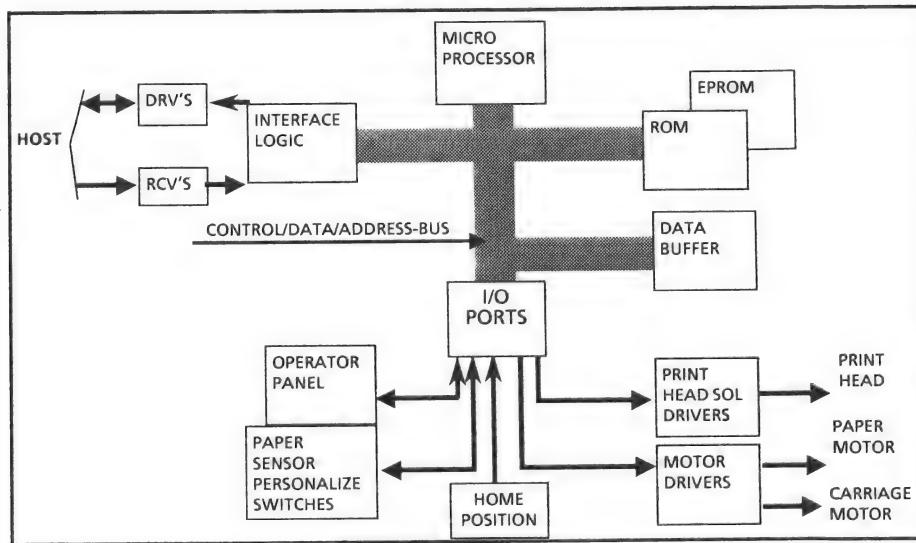
Figure 8-1   P32 CQI Block Diagram

8.2.1   QUADRAM MICROFAZER

The P32CQI printer has an IBM compatible, Centronics interface, making the use of a serial to parallel buffer mandatory, when the printer is used in conjunction with the Star workstation.

Quadram's Microfazer is a printer buffer designed to keep the computer's high operational speed from becoming dependent on the limited mechanical speed of most printers. The serial in/parallel out device receives information from the computer at a selectable baud rate, stores this information in its own memory, then sends it on to the printer at a rate the printer can accept.

This buffering action frees the computer for other tasks much sooner after a print operation has begun.

The Microfazer is equipped with a manual RESET button, a READY LED, a STATUS LED, a PAUSE/COPY button, an ERROR LED, a power switch, and an external power source connector.

It can be Configured with a memory size of 8K, *16K*, 32K, or 64K bytes. It's operation is virtually transparent to the user.

The Microfazer comes with a copy feature allowing additional copies of the buffered information. The Microfazer has a memory self test feature which aids in isolating print problems.

8.3 NS 8000 LASER CP

Diagnostics and Tests For NS 8000 Laser CP
Comprehensive sets of stand alone directive diagnostic tests have been designed to greatly ease the resolution of user problems, the tasks of the PSR and associated service personnel. One set is integral to the IOT (Input/Output Terminal) In the **NS 8000 Laser CP** configuration a second set resides in the Print Server. The diagnostic modes available are, *Automatic* (self-tests),*Customer Accessible* and *Service Representative Selectable*. Each category is described briefly below:

●*Automatic*
Self test diagnostics, which are executed at power-up, reside in the IOT firmware. Sub-system designation numbers are displayed on the operator panel momentarily as the sub-systems are sequentially tested, except for the IOTC sub-system test which is designated by a blank display. In the event a sub-system test fails to meet the verification criteria, testing halts and the failed sub-system number is left displayed with the *warning chime sounding*. The displayed error codes will be used to communicate to service what failed so the correct FRU will accompany the service rep to the customer site.

8000 Status Codes

The 8000 Network Server Print Service provides some unique status codes. These may not always be displayed on the Laser CP operator control panel; ask the Customer System Administrator for the codes. (The printer status can be obtained by typing, Show Status, in the Print Service context on the 8000 Server terminal).

Code P1, P2, P3

These codes indicate that transfer of video data did not complete. The Line Sync or Clock signals to the Server are not being processed correctly. Possible causes are; Print Server, Printer Cable, Interface Adapter Cable, Jumper Ribbon Cable between C-Video and IOTC, C-Video PWA, IOT PWA, ROS.

Code P4

This code indicates that the Print Server is unable to communicate with the Laser CP. This status may only be available on the Print Server terminal. Possible causes are, Print Server, Printer Cable, Interface Adapter Cable, Jumper Ribbon Cable between C-Video and IOTC, C-Video PWA,IOT PWA.

Code P5

This code indicates that the Host has detected an error in the sequence of status information from the Laser CP. Reboot the printer (power off and on) and/or the Print Server, to recover from this status code.

PARTITIONING BETWEEN THE PRINT SERVER AND THE PRINTER IOT

There are five lines that the Print Server and Printer use to communicate to each other:
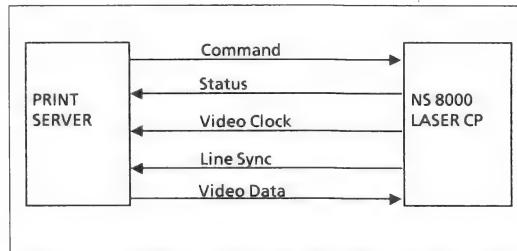
Figure 8-2   Signal Interface Flow Chart

This section pertains to three of the lines: Video Clock, Line Sync, and Video Data of the 5-Wire Interface.

A print command is sent by the Print Server and the printer responds with Status, Video Clock and Line Sync. The Print Server responds with a Feed Paper command and Video Data, provided the Status is correct. This is the typical information transmitted between the NS 8000 Laser CP and the 8000 NS Print Server.

When verifying voltage measurements on the Video Clock, Line Sync and Video Data Lines, Video Clock and Line Sync occur prior to Video Data. If Video Clock and/or Line Sync from the Printer IOTC (Input/Output Terminal) are missing, Video Data from the Print Server will also be missing. Verifying the 5-wire interface voltages at both sides of the 5-wire interface cable can eliminate the 5-wire interface cable as a problem source. A problem, for example, can be correct voltage on one side of the cable, but incorrect on the other side of the cable.

The pull-up voltages for the Video Clock and Line Sync come from the Printer IOTC. When these lines are not the correct voltage, the Printer IOTC (C-Video PWA or C-Video Harness) should be suspected as the problem source.

Then the Video Clock and Line Sync voltages are loaded down (at ground level), the Print Server can also be the problem. The voltages should be verified with the cable disconnected from the printer and the voltage verification made at the Printer Interface Connector for the standby voltage level to assure no interference from the Print Server. If the voltage is being loaded down because the Print Server is connected, call for assistance.

The pull-up voltage for Video Data comes from the Print Server. When this line is not the correct voltage level, the Print Server (Option Board) should be suspected as the problem.

If the Video Data line is loaded down, then the Printer IOTC can also be suspected. The voltage should be verified with the Interface Cable disconnected from the Print Server and voltage verified at the LSEP Port on the Print Server for the standby voltage level, to assure no interference from the Printer IOTC. If the voltage being loaded down is because the Printer IOTC is connected, call for assistance.

CSR Functional Checks

The tests for functional checks are:
- Jam Codes
- Printer Verification

Jam Codes become visible on the control panel display when depressing Last Page.

Use this
Comment
Sheet to
assist in
identifi-
cation of
errors or
needed
improve-
ments in
this manual.
For specific
errors,
include
specific
page
number in
the report.

Detach
Comment
Sheet, and
mail the
card to the
printed
address on
the reverse
side.

Service Manual Name	600P _____	Revision Level
Name	Job Title	Employee No.

Mailing Address

Page/Fig.No.	Description of Error or Improvement

	To receive an answer, mark this area. Include name, and mailing address above.

|||||

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INFORMATION SYSTEMS DIVISION

29MB DISK CONSOLE SERVICE MANUAL
600P84228
REVISION A

NOVEMBER 1984

29MB DISK CONSOLE SERVICE MANUAL
600P84228
REVISION A

NOVEMBER 1984

29MB DISK CONSOLE SERVICE MANUAL
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CHAPTER 7 PLUG/JACK LIST

CHAPTER 8 PRINCIPLES OF OPERATION

Refer to 8000 Series Reference Manual

29MB DISK CONSOLE SERVICE MANUAL
LIST OF ILLUSTRATIONS

v

CHAPTER 1   GENERAL DATA

29MB DISK CONSOLE SERVICE MANUAL

1.1   HOW TO USE THIS MANUAL

This service manual provides information necessary for maintenance of the 29MB Disk Console.

The 8000 Series Reference Manual provides the complete instructions for use of 8000 Series service manuals.

1.2   MODEL CONFIGURATIONS

Various models of 8000 Series products are available. The 8000 Series Reference Manual provides product codes, model configurations, and catalog number information, as well as related explanations.

1.3   CALL MANAGEMENT

The Call Management procedures are to be performed during every service call. The complete Call Management procedures are provided in the 8000 Series Reference Manual.

1.4   CHANGE TAG INDEX

Refer to the 8000 Series Reference Manual for instructions about use of matrix tags and Tag Letter Classification definitions.

The 29MB Disk Console has one matrix tag. The matrix tag is located on the bottom frame on the left side of the console. Any important modification of the disk drive, or related cables and connectors, must be indicated on the 29MB Disk Console matrix tag.

	CHANGE TAG INDEX FOR 29MB DISK CONSOLE	
Tag No.	Description	Serial No. Cut-in
1 N	Tag 1 moves slide-lock hardware from 29MB Signal Cable to Processor connector panel to prevent improper connection at Processor. Related part is the 29MB Signal Cable 152S81277	T25-Initial
2	CANCELLED	
3 R	Tag 3 changes the molded connector hood on 29MB Signal Cable to eliminate interference between cable connector and rear cover. Related part is the 29MB Signal Cable 152S825031.	T25- 131-
225 R	Tag 225 changes the molded connector hood on 29MB Signal Cable to eliminate interference between cable connector and rear cover. Related part is the 29MB Signal Cable 152S825031.	T25- 131-

2

CHAPTER 2 INSTALLATION/REMOVAL

29MB DISK CONSOLE SERVICE MANUAL

REFER TO 8000 SERIES REFERENCE MANUAL

3

CHAPTER 3 REPAIR DATA

29MB DISK CONSOLE SERVICE MANUAL

3.1	**CONSOLE TOP COVER**
	REF PL 4.1

REMOVAL
1. SWITCH OFF SYSTEM POWER.
2. REMOVE BOTH CONSOLE SIDE COVERS.
3. REMOVE CONSOLE TOP COVER.
   a. Remove the six speed nuts securing the Top Cover to frame.
   b. Remove Top Cover.

REPLACEMENT
1. REPLACE CONSOLE TOP COVER.
   a. Perform removal procedure in reverse order.

3.2	**CONSOLE FAN**
	REF PL 4.1

REMOVAL
1. SWITCH OFF SYSTEM POWER.
2. REMOVE CONSOLE REAR COVER.
3. REMOVE THE CONSOLE FAN
   a. Remove screws securing the Fan Cover to frame.
   b. Remove the Fan Cover.
   c. Disconnect harness connector from the Fan.
   d. Remove the Fan from console.

REPLACEMENT

CAUTION
The Fan must be installed with arrow pointing to rear of console for the correct air flow.

1. REPLACE THE CONSOLE FAN.
   a. Perform removal procedure in reverse order.

3.3   29MB DISK DRIVE
REF PL 4.2

REMOVAL

NOTE: RX only. References in the following procedures to a call for assistance or report of conditions, should be made to the RX Technical Specialist.

CAUTION

Drive replacement deletes customer files.   This requires restoration of files by customer. BEFORE replacing drive, contact RES or NSC; then notify customer's System Administrator or Network Coordinator.   Customer MUST be notified BEFORE replacing rigid drive. It is possible that Systems Analyst will know work around procedure, and drive will not require replacing. If customer will not agree to drive replacement, contact Systems Analyst for further instructions. NEVER REPLACE DISK DRIVE WITHOUT FIRST NOTIFYING CUSTOMER AND SYSTEMS ANALYST.

1   ENSURE THAT THE CORRECT DISK DRIVE REPLACEMENT PROCEDURE IS FOLLOWED
   a.   Ensure that RES or NSC is informed.
   b.   Customer has approved and understands that disk drive is to be replaced
   c.   Systems Analyst has been informed.
2   SWITCH OFF SYSTEM POWER.

3.   REMOVE BOTH SIDE COVERS.
4.   INSTALL ACTUATOR LOCK (REPLACEMENT 3.3.1).
5.   INSTALL SPINDLE LOCK (REPLACEMENT 3.3.2).
6.   REMOVE 29MB DISK DRIVE.
   a.   Disconnect power harness connector from J4 on Disk Drive Motor.
   b.   Disconnect power harness connector from J3 on Actuator PWA.
   c.   Disconnect signal harness connector from J1 on the Control PWA.
   d.   Remove the four bolts securing the Disk Drive to frame.
   e.   Carefully pull Disk Drive from console.
   f.   Remove brackets from Disk Drive.

REPLACEMENT (FIGURES 3-1 TO   3-5,   INCLUSIVE)

CAUTION

Jumpers on new Disk Drive must be configured to match old Disk Drive jumper location BEFORE installation. Several Control PWAs are now in use. Ensure that the correct figure is referred to when verifying the jumper locations.

1.   INSTALL JUMPERS ON DISK DRIVE PWAs.
   a.   Refer to Figures 3-1 to 3-5, inclusive, and install jumpers as shown.
   b.   Remove any jumpers not shown in figures.
   c.   Add any jumpers necessary, as shown in figures.
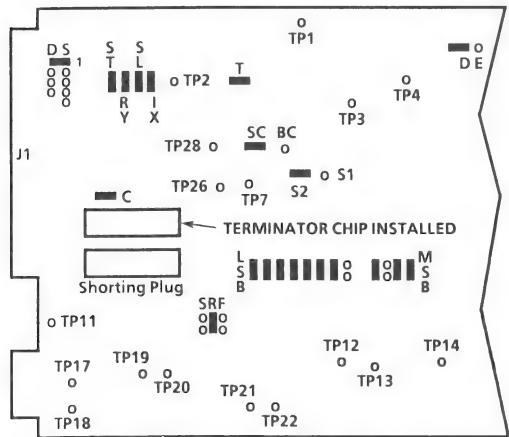
8010-049
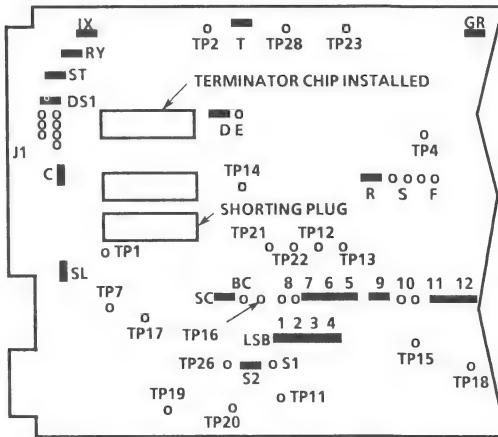
8010-050

Figure 3-1 Jumper Locations for 29MB Control PWA
(Version A)

Figure 3-2 Jumper Locations for 29MB Control PWA
(Version B)
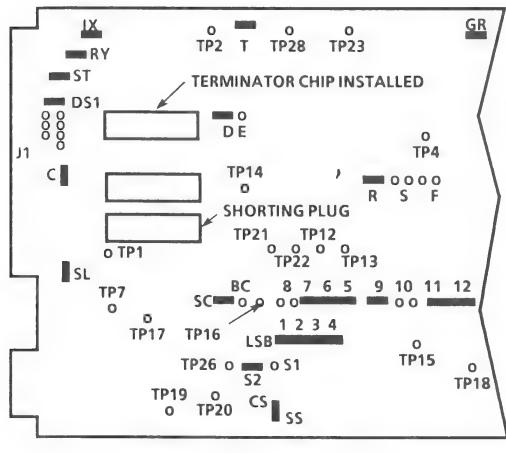
8010-051
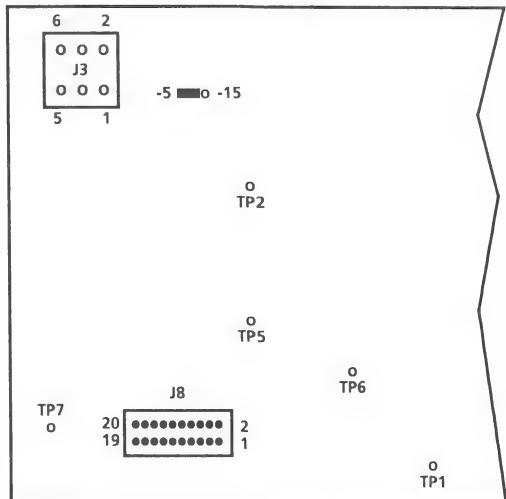
Figure 3-3 Jumper Locations for 29MB Control PWA
(Version C)

8010-052

Figure 3-4 Jumper Locations for 29MB Actuator PWA

3-5

NOTE 1: GR JUMPER PRESENT ONLY
ON LATER VERSIONS OF VFO PWA.

8010-053

Figure 3-5   Jumper Locations for 29MB VFO PWA
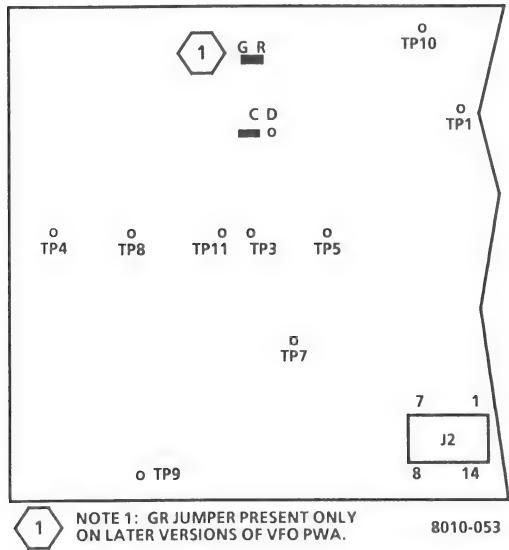
2.   REPLACE 29MB DISK DRIVE.
   a.   Replace brackets onto new Disk Drive.
   b.   Carefully install Disk Drive inside console.
   c.   Replace the four bolts securing the Disk Drive to frame
   d.   Remove spindle lock screw through the access hole in Drive Belt Cover.
   e.   Connect power harness connector to J4 on Disk Drive Motor.
   f.   Connect power harness connector to J3 on Actuator PWA.
   g.   Connect signal harness connector to J1 on the Control PWA.
3.   REMOVE ACTUATOR LOCK (3.3.1).

NOTE: The 29MB Disk Drives have bad page error maps from the OEM supplier (the Original Equipment Manufacturer of the drive) and Xerox. Refer to Figure 3-6 for a sample of the error map. Refer to Figure 3-7 for a flow chart on preparing the drive for software.

4   CHECK THE AVAILABILITY OF XEROX ERROR MAP.
   a   Remove map from the right side of drive.
   b.   Locate date on the Xerox error map If dated 11-30-82 or before, or the map does not exist, proceed to step 12

```
┌─────────────────────────────────────────────────┐
│                  OEM ERROR MAP                    │
│                                                   │
│ SA1004 SCAN ERROR LOG              SERIAL #A36497 │
│ TRK   HD      BYTE COUNT  LENGTH (BITS)           │
│ 078   00      01315          14                   │
│ 144   03      02219          15                   │
│ 145   03      02220          03                   │
│ 253   03      03938          01                   │
│ 254   03      03939          02                   │
│                                                   │
│ END ERROR LOG                                     │
└─────────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────────┐
│                 XEROX ERROR MAP                   │
│                                                   │
│ XX Megabyte Storage Device                        │
│ Serial number:  A12102                            │
│ Date.  22-Jan-82                                  │
│                         Bad Page   Manual   Media │
│    Page   Cyl   HD   Sec  Table     Entry   Scan  │
│    3908   017   03   16    X                       │
│   14420   064   03   00               X           │
│                                                   │
│ Number of bad pages: 2                            │
└─────────────────────────────────────────────────┘
```

8010 - 054(1)

Figure 3-6 Sample of OEM and Xerox
Error Maps

5. RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
    a. If ALAG completes successfully, proceed to step 6.
    b. If ALAG fails while PV Scavenger is running, proceed to step 6.
    c. If ALAG does not complete and an MP Code other than 1799 is displayed, see MP Code List.
    d. If *physical volume needs forward conversion Warnings* is displayed on the screen, proceed to step 13.

CAUTION
The following steps contain instructions that will destroy customer files. **DO NOT** logon with Analyst privileges, or perform these steps, unless service manual procedures instruct you to do so. Performing these exercises on Disk Drives containing any customer files will **DESTROY ALL CUSTOMER INFORMATION.**

6. LOGON WITH ANALYST PRIVILEGES.
    a. Refer to 8000 NS Diagnostics Handbook for detailed instructions
7. RUN DISK EXERCISER FOR 10 PASSES TO DETERMINE THE CONDITION OF THE HARDWARE.
    a. Refer to the 8000 NS Diagnostics Handbook on how to run Disk Exerciser
    b. If an error is detected other than a Header CRC, Label CRC, or Data CRC, perform Level 1 Checkout in the 8000 Processor Service Manual.

Figure 3-7   Rigid Disk Drive or Processor Software Preparation Flow Chart

c. If no error is detected, or the error is a Header CRC, Label CRC, or Data CRC, continue with step 8.

8 RUN DESTRUCTIVE SCAN FOR 2 PASSES, WITH 2 RETRIES.
   a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
   b   If bad pages are detected while Destructive Scan is running, record and save to use later.

CAUTION
When performing the next step, RESTORE the Bad Page Table.

9   FORMAT DISK DRIVE, RESTORING OLD BAD PAGE TABLE.
    a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
10 VERIFY BAD PAGE TABLE CONTAINS ALL PAGES ON XEROX ERROR MAP AND PAGES RECORDED DURING DESTRUCTIVE SCAN
    a. Compare Bad Page Table on the display to Xerox error map, and pages recorded during Destructive Scan.
    b. If all pages are in the Bad Page Table, proceed to step 16.
11. MANUALLY ENTER BAD PAGES NOT IN BAD PAGE TABLE, THEN PROCEED TO STEP 16.
    a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
    b. After entering bad pages, proceed to Step 16.
12. RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
    a. If ALAG completes successfully, proceed to step 13.

b. If ALAG fails while PV Scavenger is running, continue with step 13.
c. If ALAG does not complete and an MP Code other than 1799 is displayed, see MP Code List.
d. If *physical volume needs forward conversion Warnings* is displayed on the screen, proceed to step 13.

CAUTION
The following steps contain instructions that will destroy customer files. DO NOT logon with Analyst privileges, or perform these steps, unless service manual procedures instruct you to do so. Performing these exercises on Disk Drives containing any customer files will DESTROY ALL CUSTOMER INFORMATION.

NOTE: If you cannot logon (system locked up), perform an Alternate Boot 0002, and press the BREAK or STOP key when Fault Analysis begins.

13. LOGON ON WITH ANALYST PRIVILEGES.
    a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
14 RUN NEW DISK CHECKOUT FOR 10 PASSES TO DETERMINE THE CONDITION OF THE HARDWARE.
    a. Refer to the 8000 NS Diagnostics Handbook for detailed instructions.

b.   If an error is detected other than a Header CRC,
     Label CRC, or Data CRC while Destructive Exerciser is
     running, perform Level 1 Checkout in the 8000
     Processor Service Manual

c   If no error is detected while Destructive Exerciser is
     running, or the error is a Header CRC, Label CRC, or
     Data CRC, continue with next step.

d   When *Do you wish to reconstruct the bad page table at
     this time (Y/N):* Y is displayed, press return.

e.   When *Do you wish to perform a media scan (Y/N):* is
     displayed, type y and press return.

f.   When *Pass count (1-1000): 10* is displayed, type 2
     and press return.

g.   When *Retry Count (0-20): 2* is displayed, press return.

h.   If bad pages are detected while media scan is
     running, record and save to use later.

i.   If *Do you wish to test the bad pages (Y/N):* is
     displayed, type n and press return.

j   When *Do you wish to manually enter bad pages
     (Y/N):* is displayed, type y and press return.

k.   If Xerox error map was dated 11-30-82 or before,
     proceed to step 15.

l   Select Page Format and enter bad pages from Xerox
     error map and bad pages detected during media
     scan.

m.   Proceed to step 16.

15   MANUALLY ENTER BAD PAGES FROM OEM MAP AND
     MEDIA SCAN.

a.   Refer to the 8000 NS Diagnostics Handbook for
     detailed instructions.

16. RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
17. RETURN ERROR MAPS TO PLASTIC POUCH.
18. REPLACE COVERS.
19. INFORM SYSTEM ADMINISTRATOR TO PARTITION DISK,
     INSTALL SYSTEM SOFTWARE, AND RESTORE FILES.

3.3.1   ACTUATOR LOCK
REF PL 4.2

REMOVAL

NOTE: Some 29MB Disk Drives are not equipped with Actuator
Locks. Do not perform procedure if drive is without Actuator
Lock feature. (See PL 4.2 for Actuator Lock part number.)

1   SWITCH OFF SYSTEM POWER.
2.   REMOVE LEFT SIDE COVER.
3   REMOVE ACTUATOR LOCK (FIGURE 3-8).
     a.   Disconnect power harness connector from J3 on the
          Actuator PWA.
     b.   Switch ON system power.

CAUTION

Do not move Damper Assembly until disk speed has been
reached (approximately five seconds after AC power is applied).
Movement of heads without disk rotation may cause disk or
head damage.

     c.   Wait for disk to reach proper speed.

d. Remove Actuator Lock from motor and damper assembly by pulling it down.
e. Place lock on shelf above Disk Drive.
f. Switch OFF system power.
g. Connect power harness connector to J3 on Actuator PWA.
4. REPLACE LEFT SIDE COVER.

REPLACEMENT (Figure 3-8)

NOTE: Some 29MB Disk Drives are not equipped with Actuator Locks Do not perform procedure if drive is without Actuator Lock feature. (See PL 4.2 for Actuator Lock part number.)

1 SWITCH OFF SYSTEM POWER.
2 REMOVE BOTH SIDE COVERS.
3 INSTALL ACTUATOR LOCK (FIGURE 3-8).
  a. Disconnect power harness connector from J3 on Actuator PWA.
  b. Switch ON system power.

CAUTION
Do not move Damper Assembly until disk speed has been reached (approximately five seconds after AC power is applied). Movement of heads without disk rotation may cause disk or head damage.

  c. Wait for disk to reach proper speed.
  d. Remove damper cover.
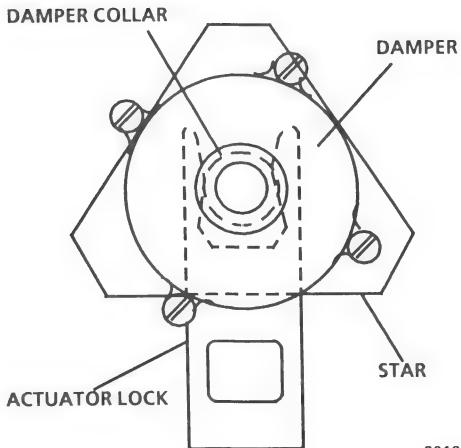
8010-055

Figure 3-8 Actuator Lock Installation

e.   Rotate damper clockwise, and observe that actuator arm moves on disk.
f.   Wait for arm to stop
g.   Install Actuator Lock between damper and star.
h.   Rotate damper clockwise until lock snaps into position on damper collar.
i   Replace damper cover
j   Switch OFF system power.
k   Connect power harness connector to J3 on Actuator PWA.

4   REPLACE BOTH SIDE COVERS.

3.3.2   SPINDLE LOCK
        REF PL 4.2

REMOVAL (FIGURE 3-9)
   1   REMOVE LEFT SIDE COVER.
   2   REMOVE SPINDLE LOCK.
        a   Remove spindle lock screw through the access hole in drive Belt Cover.
        b   Place lock in storage hole, indicated by the label at bottom of frame.
   3   REPLACE LEFT SIDE COVER.

8010-056
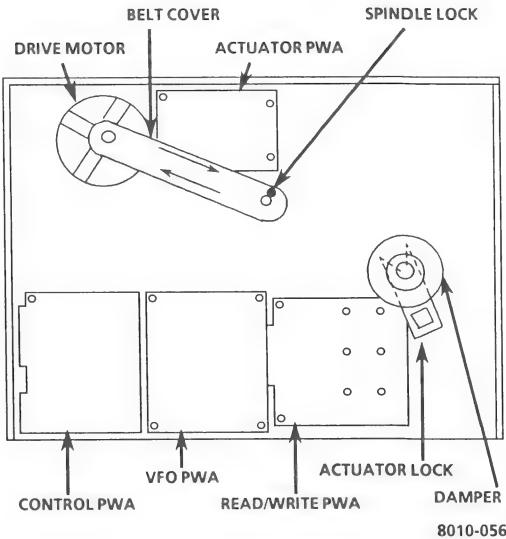
Figure 3-9 29MB Disk Drive Assembly

REPLACEMENT

CAUTION
DO NOT switch ON system power when spindle is locked.

1. SWITCH OFF SYSTEM POWER.
2. REMOVE LEFT SIDE COVER.
3. REMOVE DRIVE BELT COVER.

CAUTION
DO NOT rotate spindle in a counterclockwise direction. Disk and heads may be damaged.

4. INSTALL SPINDLE LOCK.
   a. Rotate spindle slowly in a <u>clockwise direction only</u> until hole in pulley aligns with hole in casting.
   b. Remove spindle lock screw from storage hole.
   c. Insert spindle lock screw and tighten.
5. REPLACE DRIVE BELT COVER.
6. REPLACE LEFT SIDE COVER.

3.4	29MB DRIVE BELT
	REF PL 4.2

REMOVAL
1. SWITCH OFF SYSTEM POWER.
2. REMOVE LEFT SIDE COVER.
3. REMOVE DRIVE BELT COVER.

CAUTION
DO NOT rotate spindle in counterclockwise direction. Disk or heads may be damaged.

4. REMOVE DRIVE BELT
   a. Rotate spindle slowly in a <u>clockwise direction only</u>, and work belt off pulley.

REPLACEMENT

NOTE: Ensure that Drive Belt is installed with part number on outside.

1. REPLACE DRIVE BELT.
   a. Perform removal procedure in reverse order.
   b. Run ALAG.

3.5	29MB DRIVE MOTOR
	REF PL 4.2

REMOVAL (FIGURE 3-9)
1. SWITCH OFF SYSTEM POWER.
2. REMOVE BOTH SIDE COVERS.
3. INSTALL ACTUATOR LOCK.
4. DISCONNECT POWER HARNESS CONNECTOR FROM J4 ON DRIVE MOTOR.
5. REMOVE DRIVE BELT (3.4).

NOTE: Do not replace Drive Belt Cover.

6. INSTALL SPINDLE LOCK (REPLACEMENT 3.3.2).

7. REMOVE CAPACITOR FROM BRACKET.
   a. Place small screwdriver under top edge of capacitor bracket.
   b. To remove capacitor, carefully apply pressure with screwdriver, and pull on body of capacitor.
8. REMOVE DRIVE MOTOR.
   a. Remove Drive Motor connector J4 from bracket.
   b. Remove the two screws securing the motor relay to casting.

NOTE: Ensure that the insulating washers on both sides of motor mounts, are glued to casting or motor.

   c. Support the motor while removing the four mounting screws.
   d. Remove Drive Motor assembly from casting.
9. REMOVE PULLEY.
   a. Loosen the two set screws on Drive Motor pulley.
   b. Remove pulley from motor shaft.
   c. Keep pulley for use with new Drive Motor.

REPLACEMENT
1. REPLACE PULLEY
   a. Align one set screw with flat side of motor shaft, and install pulley onto shaft.
   b. Place 0.035 inch (0.88) shim between outer edges of pulley and motor.
   c. Move pulley against shim, and tighten set screws.
   d. Remove shim.

NOTE: Ensure that the insulating washers are on both sides of motor mounts, and that motor does not touch casting.

2. REPLACE DRIVE MOTOR.
   a. Ensure that there are insulating washers glued to motor mounts or motor.
   b. Support the motor while threading the capacitor, relay, and power connector J4 through hole in casting.
   c. Install the four screws and four insulating washers, but do not tighten.

CAUTION
Do not apply too much torque to screws, or the insulating washers will split.

   d. Attach ohm meter leads to casting and motor.
   e. Tighten the four screws and observe meter to ensure that motor does not touch casting.
   f. Remove meter leads from motor and casting.
   g. Position relay and replace the two screws securing it to the casting.
   h. Install capacitor into bracket.
   i. Install Drive Motor connector J4 into bracket.
3. REMOVE SPINDLE LOCK SCREW AND PLACE IN STORAGE.
4. REPLACE DRIVE BELT (3.4).
5. CONNECT POWER HARNESS CONNECTOR TO DRIVE MOTOR CONNECTOR J4.
6. REMOVE ACTUATOR LOCK (3.3.1).

7.   RUN ALAG.
8.   REPLACE BOTH SIDE COVERS.

3.6   ACTUATOR PWA
REF PL 4.2

REMOVAL (FIGURE 3-9)
1   SWITCH OFF SYSTEM POWER.
2   REMOVE LEFT SIDE COVER.
3   REMOVE DRIVE BELT COVER.

CAUTION
Do not cause any disk movement by moving the drive belt.

4   REMOVE ACTUATOR PWA.
   a.   Remove J8 connector from Actuator PWA.
   b.   Remove power harness connector from Actuator PWA J3.
   c   Remove the four screws securing PWA to casting.
   d.   Move PWA slightly to left and disconnect P9 and P10 from PWA.
   e.   Remove Actuator PWA.

REPLACEMENT (FIGURE 3-4)
1   INSTALL JUMPER ON ACTUATOR PWA.
   a.   Refer to Figure 3-4 and install jumper as shown.
2.   REPLACE ACTUATOR PWA.
   a.   Perform removal procedure in reverse order.
3.   SWITCH ON SYSTEM POWER.
4   RUN ALAG.

3.7   VFO PWA
REF PL 4 2

REMOVAL (FIGURE 3-9)
1.   SWITCH OFF SYSTEM POWER.
2.   REMOVE LEFT SIDE COVER.
3.   REMOVE VFO PWA.
   a.   Release clips securing corners of PWA, and remove from mounting studs.
   b.   Disconnect P2 and P3 connectors from VFO PWA.

REPLACEMENT (FIGURE 3-5)
1.   INSTALL JUMPERS ON VFO PWA.
   a.   Refer to Figure 3-5 and install jumpers as shown.

2.   REPLACE VFO PWA.
   a.   Perform removal procedure in reverse order.
3.   SWITCH ON SYSTEM POWER.
4.   RUN ALAG.

3.8   CONTROL PWA
REF PL 4 2

REMOVAL (FIGURE 3-9)
1.   REMOVE VFO PWA (3.7).
2.   REMOVE CONTROL PWA.
   a.   Remove signal harness connector from J1 on Control PWA.
   b.   Disconnect harness from J7 on Control PWA.

c.   Remove the four screws securing the PWA to casting.
d.   Move PWA to left, and disconnect from Read/Write PWA.
e.   If Control PWA is being replaced, remove the two ribbon cables from PWA.

REPLACEMENT (FIGURES 3-1, 3-2, 3-3)

CAUTION
Jumpers on new Control PWA must be configured to match old Control PWA jumper locations BEFORE installation.   Several Control PWAs are now in use. Ensure that the correct figure is referred to when verifying the jumper locations.

a   Refer to Figures 3-1, 3-2, and 3-3 and install jumpers as shown.
b.   Remove any jumpers not shown in figures.
c.   Add any jumpers necessary, as shown in figures.
2   REPLACE CONTROL PWA
a   Perform removal procedure in reverse order.
3   SWITCH ON SYSTEM POWER
4   RUN ALAG.

```
3.9      READ/WRITE PWA
         REF PL 4.2
```

REMOVAL (FIGURE 3-9)
1.   REMOVE CONTROL PWA (3.8).
2   REMOVE DAMPER ASSEMBLY COVER.
3.   REMOVE READ/WRITE PWA.

a.   Remove the two screws on left side of Read/Write PWA.
b.   Remove the six screws from center of Read/Write PWA.

CAUTION
Do not pull head cables through seal. This will reduce slack inside the Disk Drive and prevent arms from moving properly.

c.   Carefully pull Read/Write PWA away from casting enough to reach behind PWA and disconnect cables.
d.   Disconnect cables from component side of Read/Write PWA.
7.   If rubber gasket adheres to Read/Write PWA, remove and replace around hole in casting.

REPLACEMENT (FIGURE 3-10)

NOTE: Cables are sequentially marked. P20 is at bottom, and P28 is at top.

1.   REPLACE READ/WRITE PWA.
a.   Ensure that rubber gasket is properly attached around hole in casting.
b.   Carefully connect head cables on new PWA (Figure 3-10)
c.   Push PWA against casting, ensuring that the wires are not caught between PWA and casting.
e.   Replace the eight screws securing the Read/Write PWA to casting.

COMPONENT SIDE

J28/P28

6 ☐ ○○○○○○ ☐ 1

J23/P23

6 ☐ ○○○○○○ ☐ 1   P6

J22/P22

6 ☐ ○○○○○○ ☐ 1

J21/P21

6 ☐ ○○○○○○ ☐ 1

J20/P20

6 ☐ ○○○○○○ ☐ 1

8010-057

Figure 3-10   Read/Write PWA
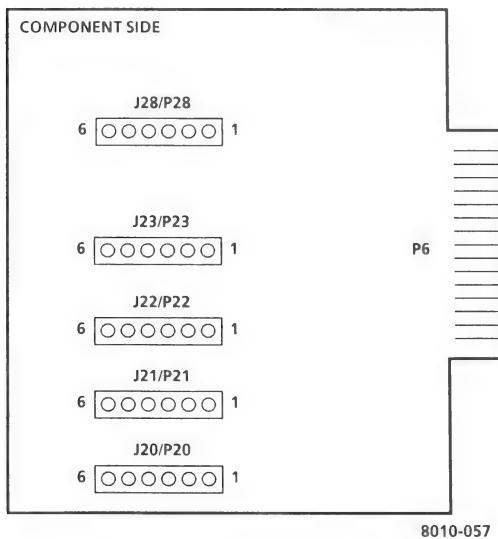
2.   REPLACE CONTROL PWA (3.8)
3.   REPLACE VFO PWA (3.7).
4.   SWITCH ON SYSTEM POWER
5.   RUN ALAG.
6.   REPLACE LEFT SIDE COVER.

3.10   DAMPER ASSEMBLY
REF PL 4.2

REMOVAL
1.   SWITCH OFF SYSTEM POWER.
2.   REMOVE BOTH SIDE COVERS.
3.   REMOVE DAMPER ASSEMBLY.
   a.   Disconnect power harness connector J3 from Actuator PWA.
   b   Switch ON system power.

CAUTION
DO NOT move Damper Assembly until disk speed has been reached (approximately five seconds after AC power is applied). Movement of the heads without disk rotation may cause disk or head damage.

   c.   Remove damper cover
   d.   Rotate damper counterclockwise until actuator arm is located against the outer stop.
   e.   Loosen set screw securing the damper and collar to actuator motor shaft.
   f.   Remove damper assembly from shaft.

REPLACEMENT

CAUTION

AC power must be applied while installing Damper Assembly.

1. REPLACE DAMPER ASSEMBLY.
   a. Ensure that harness connector J3 is disconnected.
   b. Switch ON system power.
   c. Install Damper Assembly onto actuator motor shaft.

NOTE: Ensure that damper and collar are NOT in contact with actuator motor housing.

   d. Tighten set screw securing the damper to actuator motor shaft.
   e. Replace damper cover.
   f. Switch OFF system power
   g. Connect power harness connector to J3 on Actuator PWA.
2. SWITCH ON SYSTEM POWER
3. RUN ALAG.
4. REPLACE BOTH SIDE COVERS

CHAPTER 4 PARTS IDENTIFICATION

29MB DISK CONSOLE SERVICE MANUAL

USO/XC ONLY

4

| PL 4.1 | 29MB CONSOLE MECHANICAL PARTS |

ITEM	PART NO.	DESCRIPTION
1	2P81938	Cover, Top
2	NSC: 2P82011	Plate, Fan Cover
3	127P1275	Fan, Console
4	2S81969	Cover, Rear (includes item 13)
5	NSC: 30P83957	Bracket, Drive Mounting
6	2S81967	Cover, Side (includes item 13)
7	26P80475	Stud, Castor Locking
8	17P80207	Castor, Rear
9	3P1454	Clip, Quarter Turn Receptacle
10	17P80199	Castor, Front
11	2S81968	Cover, Front (includes 12, 13)
12	NSC: 91P81325	Label, Logo
13	601S920	Kit, Quarter Turn Hardware
14	- -	Stud, Quarter Turn (P/O item 13)
15	- -	Spring, Ejector (P/O item 13)
16	- -	Washer, Nylon (P/O item 13)
17	- -	Retainer, Split Ring (P/O item 13)
18	NSC: 2P82021	Bezel, Front Cover
19	NSC: 29P80410	Nut, Speed

A	112W39710	Sems Screw (8-32 x 7/16)
B	112W75810	Sems Screw (1/4-20 x 1/2)
C	201W21802	Nut (1/4-20)
D	256W11402	Washer (1/4)
E	- -	Screw (RX only)
F	- -	Screw (RX only)

NSC: Call the Network Support Center to obtain parts.

Removal and Replacement 3.1, 3.2

8000-007(2)
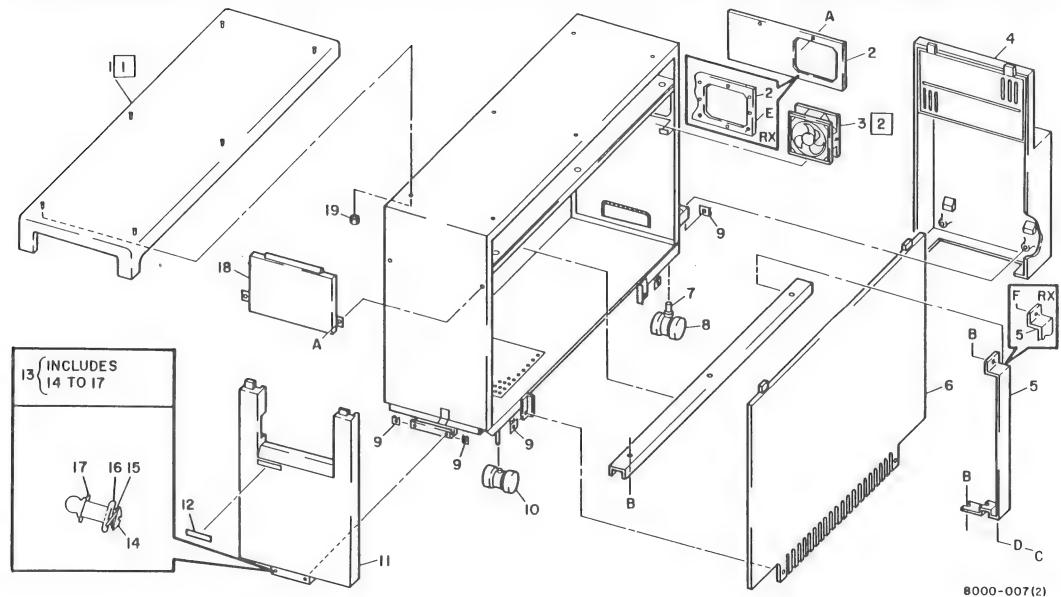
Figure 4-1 29MB Console Mechanical Parts

| PL 4.2   DISK DRIVE ASSEMBLY |

ITEM	PART NO.	DESCRIPTION
1	99P80929	Motor, 60Hz Drive
2	82P80897	Drive Assembly, 29MB Disk
3	99P80921	PWA, Actuator
4	99P81093	Harness, C-A
5	99P87543	Lock, Actuator (Note 1)
6	99P81095	Damper Assembly
7	99P87509	PWA, Read/Write
8	99P87511	PWA, VFO
9	99P81094	Harness, C-V
10	- -	Terminator (RX only)
11	99P87510	PWA, Control
12	NSC: 99P80924	Cover, Belt
13	99P80925	Belt, 60Hz Drive
14	NSC: 99P80927	Pulley, Belt
15	99P81226	Kit, Belt Retainer

A	201W21802	Hex Nut (1/4-20)
B	256W11402	Lockwasher (1/4)
C	256W10902	Lockwasher (No. 8)
D	113W23002	Screw (8-32 x 5/8)
E	112W39610	Screw (8-32 x 3/8)
F	113W22402	Screw (8-32 x 1/4)
G	113W17208	Spindle Lock Screw (4-40 x 3/4)
H	259W10502	Spindle Lock Lockwasher (No. 4)
J	113W16602	Screw (4-40 x 3/8)

NSC: Call the Network Support Center to obtain parts.

NOTE 1: Actuator lock may not be provided on all disk drives.

Removal and Replacement 3.1 to 3.10, inclusive.

8000-008(2)
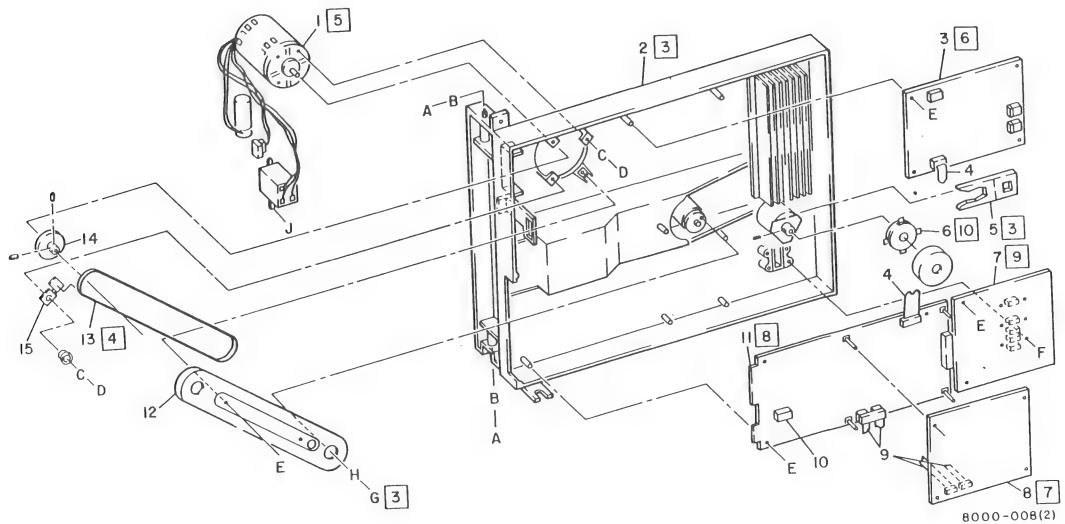
Figure 4-2 Disk Drive Assembly

PL 4.3 29MB CONSOLE HARNESSES

ITEM	PART NO.	DESCRIPTION
1	152S25031	Cable **W21**, 29MB Signal **(TAGS 3, 225)**
	152S25030	Cable **W21**, 19MB Signal (alt.)
2	NSC: 19P20514	Clamp, Cable
3	NSC: 19P20515	Clamp, Cable
4	- -	Block, Cable Tie (P/O item 1)
5	152S25440	Cable **W20**, 29MB Power
6	- -	Cover, Rear Cable (RX only)
7	- -	Clamp, Cable (RX only)

A	112W36710	Screw (8-32 x 7/16)
B	258W10902	Lockwasher (No. 8)
C	- -	Screw (RX only)
D	- -	Screw (RX only)

NSC: Call the Network Support Center to obtain parts.
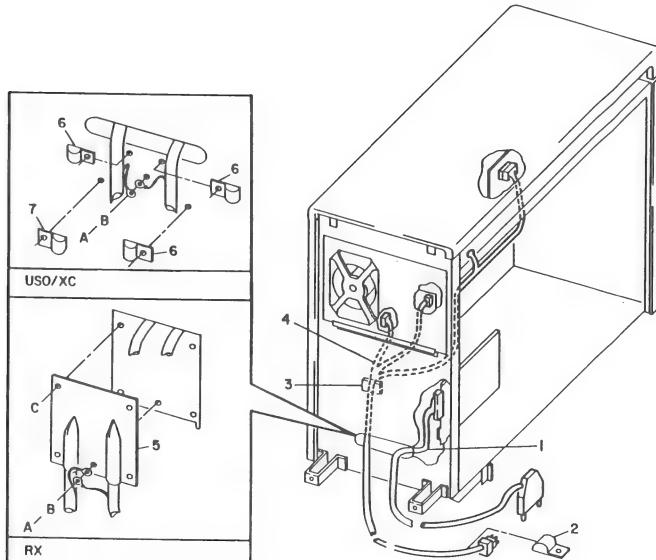
8000-009(4)

Figure 4-3   29MB Console Harnesses

CHAPTER 5   PRINT/DISPLAY QUALITY

29MB DISK CONSOLE SERVICE MANUAL

REFER TO APPROPRIATE SERVICE MANUAL

5

CHAPTER 6 TROUBLESHOOTING

29MB DISK CONSOLE SERVICE MANUAL

6

| INTRODUCTION |

Service Strategy

The steps required for isolation of faults in the 8000 Network System, are provided in the sequence below. These steps are described in detail in the 8000 Processor Service Manual. Instructions for using diagnostics are provided in the 8000 Network Systems Diagnostics Handbook.

1. Perform Level 01 Troubleshooting, using the Level 01 Troubleshooting Flowchart.
2. Perform the Level 1 Checkout procedure.
3. Perform any Level 2 Check Chart procedures indicated by Level 1 Checkout.
4. USO only. If necessary, ask for assistance from the Region Engineering Specialist (RES) or the Network Support Center (NSC).
5. RX only. If necessary, ask for assistance from the Technical Specialist.

Information obtained during fault isolation (in the 8000 Processor Service Manual) may refer you to this manual or other manuals.

Use the appropriate amount of time (determined by the local Branch Manager) to troubleshoot a problem. Then, if a correction cannot be made, ask for assistance.

STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT

6.01	29MB DISK FAULTS

1. Lower the VFO PWA. The following voltages, at the Control PWA, are within tolerance:

		Control PWA J6 (Figure 6-1)		
a.	5.2V	Pin J	Step 1b	Step 2
b.	-5.2V	Pin E	Step 1c	Step 2

CAUTION

When checking the 24V at Pin 22, switch OFF power, and connect E-Z hook meter lead to Pin 22 lead on the Control PWA (Figure 6-1). Switch ON power.

c.	24V	Pin 22	Step 1d	Step 2
d.	12V	Pin B	Check Chart 6.02	Step 2

VOLTAGE TOLERANCES		
Voltage	**Xerox 600T860**	**Digital Meter**
5.2V	4.8 to 5.6	5.02 to 5.38
-5.2V	-4.8 to -5.6	-5.02 to -5.38
-12V	-11.0 to -13.0	-11.4 to -12.6
12V	11.0 to 13.0	11.4 to 12.6
24V	22.0 to 26.0	22.8 to 25.2
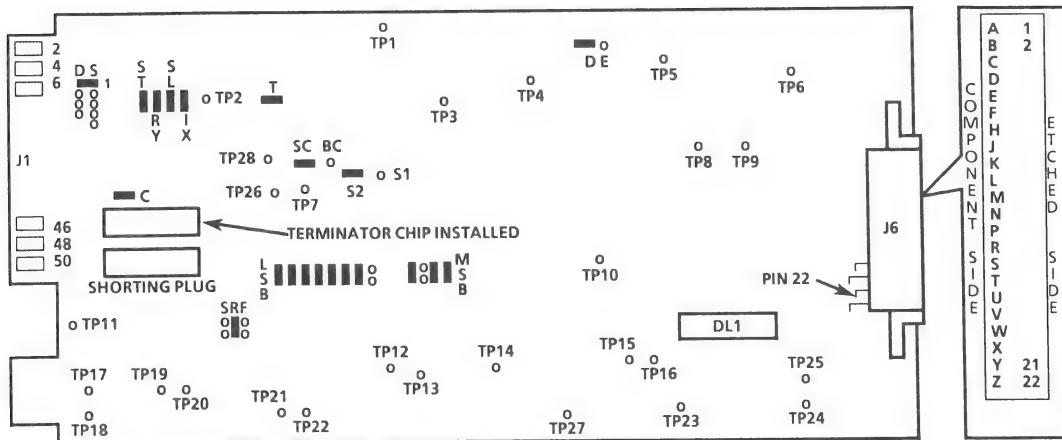
Figure 6-1 Control PWA (Version A)

8010-014
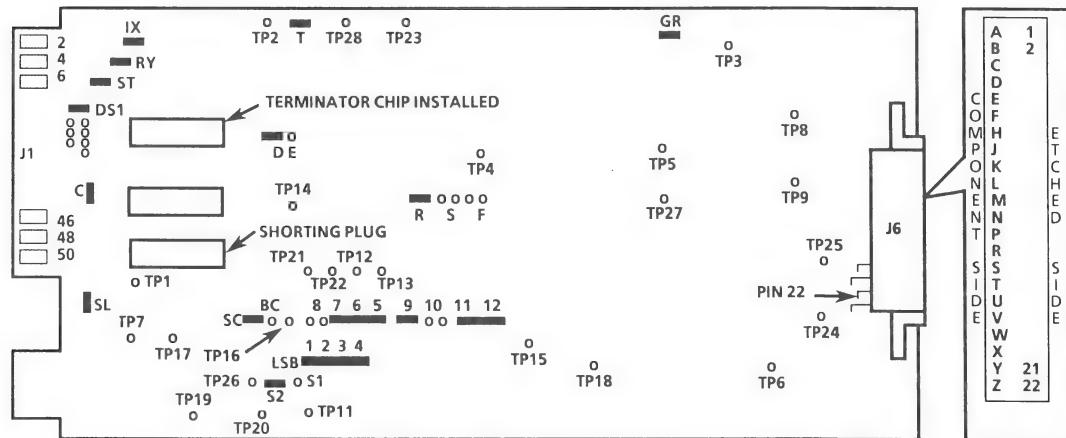
Figure 6-2   Control PWA (Version B)

8010-015
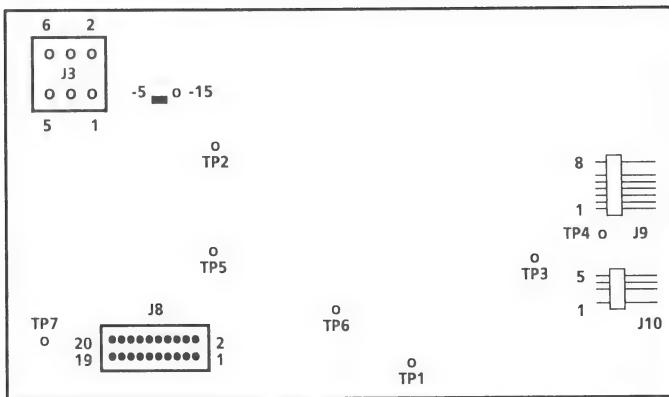
Figure 6-3 Actuator PWA   8010-016

STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT
2	Disconnect C-A (ribbon) Harness connector J8 from Actuator PWA. All of the following voltages are within tolerance:	Actuator PWA J8 (Figure 6-3)	Replace C-A Harness. If problem still exists, replace Control PWA.	Step 3
	a. 5.2V	Pin 8		
	b. 5.2V	Pin 10		
	c. 5.2V	Pin 12		
	d. 5.2V	Pin 14		
	e. -5.2V	Pin 16		
	f. 24V	Pin 19		
	g. 24V	Pin 20		
	h. 12V	Pin 18		
3	All of the following voltages are within tolerance:	Actuator PWA J3 (Figure 6-3)	Replace Actuator PWA	Replace 29MB Power Cable
	a. 5.2V	Pin 5		
	b. -5.2V	Pin 4		
	c. 24V	Pin 1		

VOLTAGE TOLERANCES		
Voltage	Xerox 600T860	Digital Meter
5.2V	4.8 to 5.6	5.02 to 5.38
-5.2V	-4.8 to -5.6	-5.02 to -5.38
-12V	-11.0 to -13.0	-11.4 to -12.6
12V	11.0 to 13.0	11.4 to 12.6
24V	22.0 to 26.0	22.8 to 25.2

STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT

6.02	DISK MP FAULT CODE

CAUTION

Performing the following steps with P43 connected to the HSIO PWA will write over, and therefore destroy, customer files.

NOTE: When P43 is disconnected from the HSIO PWA, the system cannot determine if there is a 29MB, 42MB, or 10MB Disk Drive installed. Since the 10MB Data Wrap Around test does not require the Disk Drive to be connected this is the test you should select.

STEP	PROCEDURE	TEST POINT	CORRECT	INCORRECT
1.	Disconnect P43 only from HSIO PWA. Run ALAG. Upon the completion of Test 0316, press STOP key on 8010 Workstation or BREAK key on Server Terminal. When the MP reaches *0399*, type a d. When MP reaches *0799*, type an s then 31, then press return. Test ran successfully (MP = *0799*).	Visual	Step 2	Replace HSIO PWA
2.	Connect P43 to HSIO PWA. Locate the original MP Code from the list below, and access the specified Check Chart.	Visual		
	a. 1611 to 1618, inclusive		Check Chart 6.02.1	
	b. 1631 to 1636, inclusive		Check Chart 6.04	
	c. 1641 to 1643, inclusive		Check Chart 6.05	
	d. 1671 or 1672		Check Chart 6.03	
	e. 1713		Check Chart 6.06	
	f. 1741, 1742, or 1791		Check Chart 6.07	
	g. None of the above		See MP Code List in Processor Service Manual	

STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT

6.02.1   DISK NOT READY

STEP	PROCEDURE	TEST POINT	CORRECT	INCORRECT
1	Drive Motor is running.	Visual	Step 2	Check Chart 6.02.2
2	Disk is spinning.	Visual	Step 3	Check Chart 6.02.4

NOTE: Use Logic Probe 600T1580 for all measurements.

STEP	PROCEDURE	TEST POINT	CORRECT	INCORRECT
3	Verify that DS jumper is in the correct location at DS1, then logon using **xerox** and **cixcos** for name and password. Enter the **Isolation Tools.** Select **Drive Select - Dynamic - Frequency: 1000.** Logic Probe indicates pulses.	Control PWA DS Jumper (Figure 6-1 or 6-2)	Step 4	Check Chart 6.02.3

NOTE: Test selected in Step 3 should still be running while performing Step 4.

STEP	PROCEDURE	TEST POINT	CORRECT	INCORRECT
4	Measure the Control PWA jumper RY. Probe indicates pulses.	Control PWA RY Jumper (Figure 6-1 or 6-2)	Step 5	Check Chart 6.02.5
5.	Measure HSIO PWA. Probe indicates pulses.	HSIO PWA J43-22	Replace HSIO PWA	Step 6
6.	Disconnect P1 from Processor Connector Panel J2 and J1 from the Control PWA. 29MB Signal Cable has continuity.	29MB Signal Cable J1-F to P1-12	Step 7	Replace 29MB Signal Cable

| | | | INDICATION | |
STEP	PROCEDURE	TEST POINT	CORRECT	INCORRECT
7	Disconnect J43 from HSIO PWA. 29MB Interface Harness has continuity.	29MB Interface Harness J2-12 to J43-22	Replace in order: Control PWA HSIO PWA	Replace 29MB Interface Harness

6.02.2   NO MOTOR DRIVE

1	Voltage at Drive Motor is as follows: USO. 103 to 127 VAC RX. 193 to 264 VAC	Drive Motor J4-1 to 3	Replace Drive Motor	Check the 29MB Power Cable; replace bad cable

6.02.3   NO DRIVE SELECT

1	Press STOP on 8010 Workstation or BREAK on Server Terminal. Select Drive Select - Dynamic - Frequency 1000. Measure HSIO PWA with Logic Probe 600T1580. Probe indicates pulses.	HSIO PWA J43-26	Step 2	Replace HSIO PWA
2.	Disconnect P1 from Processor Connector Panel J2 and J1 from the Control PWA. 29MB Signal Cable has continuity.	29MB Signal Cable J1-J to P1-16	Step 3	Replace 29MB Signal Cable
3.	Disconnect J43 from HSIO PWA. 29MB Interface Harness has continuity.	29MB Interface Harness J2-16 to J43-26	Replace in order: Control PWA HSIO PWA	Check 29MB Interface Harness connector for loose pins; replace bad harness

STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT

6.02.4	MECHANICAL ISOLATION			
1.	Verify that Spindle Lock Screw and Actuator Lock are removed.	Visual	Step 2	Remove Lock Screw and Actuator Lock (Procedures 3.3.1 and 3.3.2)
2.	Verify that pulley is correctly installed.	Visual	Step 3	Tighten or replace pulley
3	Verify that Drive Belt is correctly installed.	Visual	Replace in order: Control PWA HSIO PWA	Install Drive Belt

6.02.5	LOGIC NOT READY

NOTE: Lower the VFO PWA to access the Control PWA. Place two sheets of paper under VFO PWA to prevent an electrical short from PWA to disk console frame.

1.	Measure the Control PWA with Logic Probe 600T1580. Probe shows a high indication.	Control PWA TP 8 (Figure 6-1 or 6-2)	Replace in order: R/W PWA Control PWA If problem still exists, call for assistance.	Replace Control PWA

STEP	PROCEDURE	TEST POINT	INDICATION CORRECT	INCORRECT
6.03	**LOGIC FAULT**			
1	Measure the Control PWA with Logic Probe 600T1580. Probe shows a high indication.	Control PWA TP 21 (Figure 6-1 or 6-2)	Check Chart 6.03.1	Replace in order: R/W PWA Control PWA If problem still exists, call for assistance.
6.03.1	**CONTROL FAULT**			
1	Run Fault Analysis. After an MP Code is displayed, Logic Probe 600T1580 shows a low indication.	Control PWA TP 22 (Figure 6-1 or 6-2)	Step 2	Replace in order: R/W PWA Control PWA If problem still exists, call for assistance.
2	Measure the Control PWA with Logic Probe, 600T1580. Probe shows a high indication.	Control PWA TP 12 (Figure 6-1 or 6-2)	Step 3	Check Chart 6.02.1
3.	Measure the Control PWA with Logic Probe, 600T1580. Probe shows a low indication.	Control PWA TP 13 (Figure 6-1 or 6-2)	Step 4	Replace in order: R/W PWA Control PWA If problem still exists, call for assistance.

STEP	PROCEDURE	TEST POINT	INDICATION CORRECT	INCORRECT
4.	Measure the Control PWA with Logic Probe 600T1580. Probe shows a low indication.	Control PWA J1-30 (Figure 6-1 or 6-2)	Replace HSIO PWA	Step 5
5.	Disconnect P1 from Processor Connector Panel J2 and J1 from the Control PWA. 29MB Signal Cable has continuity.	29MB Signal Cable P1-34 to J1-U	Step 6	Replace 29MB Signal Cable
6.	Disconnect J43 from HSIO PWA. 29MB Interface Harness has continuity.	29MB Interface Harness J2-34 to J43-44	Replace Control PWA	Check 29MB Interface Harness connector for loose pins; replace bad harness

6.04   TRACK SEEK INCOMPLETE

STEP	PROCEDURE	TEST POINT	INDICATION CORRECT	INCORRECT
1	Enter the Isolation Tools. Select Step Pulses - Frequency 1000 - Inward. Measure SC Jumper on the Control PWA with Logic Probe 600T1580. Probe shows pulsing indication.	Control PWA SC Jumper (Figure 6-1 or 6-2)	Step 2	Replace in order: Actuator PWA C-A Harness Control PWA HSIO PWA

NOTE: Test selected in Step 1 should still be running while performing Step 2.

STEP	PROCEDURE	TEST POINT	INDICATION CORRECT	INCORRECT
2.	Measure C Jumper on the Control PWA with Logic Probe 600T1580. Probe shows pulsing indication.	Control PWA C Jumper (Figure 6-1 or 6-2)	Step 3	Replace Actuator PWA

		TEST	INDICATION	
STEP	PROCEDURE	POINT	CORRECT	INCORRECT

NOTE: Test selected in Step 1 should still be running while performing Step 3.

| 3. | Measure HSIO PWA with Logic Probe 600T1580. Probe shows pulsing indication. | HSIO PWA J43-8 | Replace HSIO PWA | Replace 29MB Signal Cable |

6.05   RESTORE ERRORS

| 1 | Enter the Isolation Tools Select Step Pulses - Frequency 1000 - Outward. When test stops, Logic Probe 600T1580 shows a high indication (heads at track 00). | Actuator PWA J10-1 (Figure 6-3) | Step 2 | Check Chart 6.6 |
| 2. | Measure Actuator PWA with Logic Probe 600T1580. Probe shows a high indication. | Actuator PWA TP3 (Figure 6-3) | Replace in order: Control PWA Actuator PWA HSIO PWA If problem still exists, call for assistance. | Replace Actuator PWA. If problem still exists, call for assistance. |

STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT

6.06	SEEK ERRORS			
1.	Enter the Isolation Tools. Select Step Pulses - Frequency 1000 - Inward. Measure Actuator PWA with Logic Probe 600T1580. Probe shows a high indication, pulsing low.	Actuator PWA TP5 (Figure 6-3)	Step 2	Step 4
2	Verify that heads are moving. (Repeat Step 1, selecting Outward, if necessary.)	Visual	Step 3	Replace Actuator PWA. If problem still exists, call for assistance.
3.	Original MP code was 1713.	Visual	Replace in order: Control PWA Actuator PWA HSIO PWA C-A Harness 29MB Signal Cable Damper Assembly If problem still exists, call for assistance.	Replace in order: Actuator PWA Damper Assembly If problem still exists, call for assistance.
4	Measure the Control PWA with Logic Probe 600T1580. Probe shows pulsing indication.	Control PWA J1-26 (Figure 6-1 or 6-2)	Replace in order: Control PWA C-A Harness Actuator PWA	Step 5

STEP	PROCEDURE	TEST POINT	INDICATION CORRECT	INCORRECT
5.	Measure HSIO PWA with Logic Probe 600T1580. Probe shows pulsing indication.	HSIO PWA J43-36 (Harness connected)	Replace 29MB Signal Cable	Replace in order: HSIO PWA 29MB Signal Cable

6.07   WRITE ERRORS

| 1 | Run Fault Analysis. When *1740* is on the MP, measure Write Data Pattern on Control PWA with Logic Probe 600T1580. Probe shows data flow (High lamp lit steady, and Low lamp pulsates). | Control PWA TP17 (Figure 6-1 or 6-2) | Replace in order: R/W PWA VFO PWA HSIO PWA | Replace in order: Control PWA HSIO PWA 29MB Signal Cable |

6.08   COOLING FAN

| 1 | Voltage at Fan is as follows: USO. 103 to 127 VAC RX. 193 to 264 VAC | Fan Connector P2-1 to 2 | Replace Fan | Replace 29MB Power Cable |

6.09   RIGID DISC DRIVE LOADING

| 1 | Connect J1 to rear of Processor and disconnect J3 from Actuator PWA. Voltage in question is within tolerance. | Test Connector to RTN | Step 2 | Replace 29MB Power Cable. |

| STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT

5.2V

-5.2V

RETURN

24V

-12V

12V
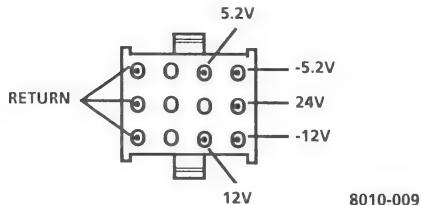
8010-009

Figure 6-4 Test Connector

2.	Connect J3 to Actuator PWA. Disconnect J8 from Actuator PWA. Voltage in question is within tolerance.	Test Connector to RTN	Step 3	Replace Actuator PWA
3.	Connect J8 to Actuator PWA. Disconnect J7 from the Control PWA. Voltage in question is within tolerance.	Test Connector to RTN	Step 4	Replace C-A Harness

STEP	PROCEDURE	TEST POINT	INDICATION	
			CORRECT	INCORRECT
4.	Connect J7 to the Control PWA. Disconnect right hand C-V (ribbon) Harness from bottom of the Control PWA and J6 from the Control PWA. Voltage in question is within tolerance.	Test Connector to RTN	Step 5	Replace Control PWA
5.	Connect C-V (ribbon) Harness to the Control PWA. Disconnect J2 from VFO PWA. Voltage in question is within tolerance.	Test Connector to RTN	Step 6	Replace C-V Harness
6.	Connect J2 to VFO PWA. Voltage in question is within tolerance.	Test Connector to RTN	Step 7	Replace VFO PWA
7.	Connect J6 to the Control PWA. Voltage in question is within tolerance.	Test Connector to RTN	Return to Level 1	Replace R/W PWA

VOLTAGE TOLERANCES		
Voltage	Xerox 600T860	Digital Meter
5.2V	4.8 to 5.6	5.02 to 5.38
-5.2V	-4.8 to -5.6	-5.02 to -5.38
-12V	-11.0 to -13.0	-11.4 to -12.6
12V	11.0 to 13.0	11.4 to 12.6
24V	22.0 to 26.0	22.8 to 25.2

8010-048
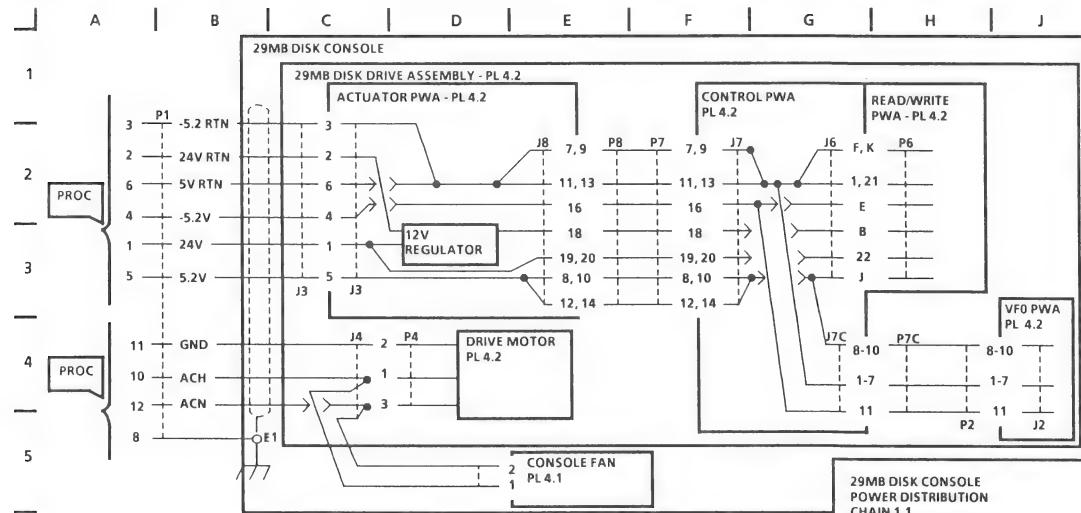
Figure 6-5 Chain 1.1 29MB Disk Console Power Distribution

CHAPTER 7   PLUG/JACK LIST

29MB DISK CONSOLE SERVICE MANUAL

7

7.1   INTRODUCTION

Harnesses for the 29MB Disk Console are each identified with an alphanumeric code (W00). These harness codes are defined in Section 7.2. The codes are used on plug/jack location diagrams.

In Section 7.3, a plug/jack location diagram (Figure 7-1) is provided to show actual locations of plugs and jacks. Each plug/jack is identified by harness code and plug/jack name.

Section 7.4 provides illustrations of the wiring data for each harness. The wiring data illustrations (Figures 7-2 and 7-3) use letter codes, within a hexagonal symbol, which identify related connector diagrams.

Pin location diagrams for various types of connectors are provided in Section 7.5. The diagrams (Figures 7-4 to 7-8, inclusive) show pin side view of the connectors.

7.2   HARNESS IDENTIFICATION

W20   29MB Power Cable
W21   29MB Signal Cable

7.3   PLUG/JACK LOCATIONS

Refer to Figure 7-1 for illustration of plug/jack locations and identification.

7.4   WIRING DATA

Refer to Figures 7-2 and 7-3 for illustrations of the wiring data for each harness.

7.5   CONNECTOR IDENTIFICATION

Refer to Figures 7-4 to 7-8, inclusive, for pin location diagrams for various types of connectors used on harnesses. The diagrams show pin side view of connectors.

W20-J3/ACTUATOR PWA J3

W20-J4/MOT J4

W20-P2/FAN

W2I-JI/CONTROL PWA JI

W2I-PI/WI4-J2 (PROCESSOR)

W20-PI/WI4-JI (PROCESSOR)

W20-PI/EI   W2I-PI/EI
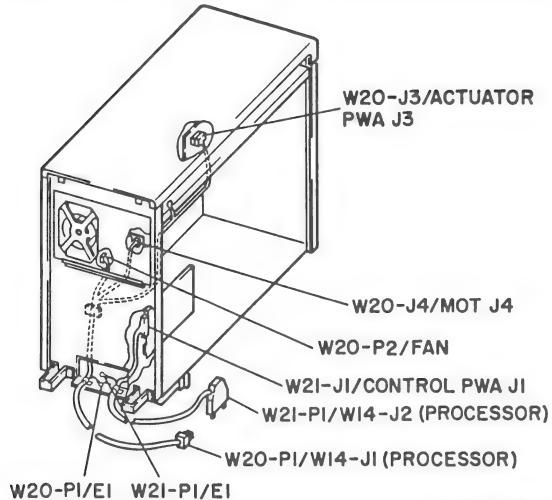
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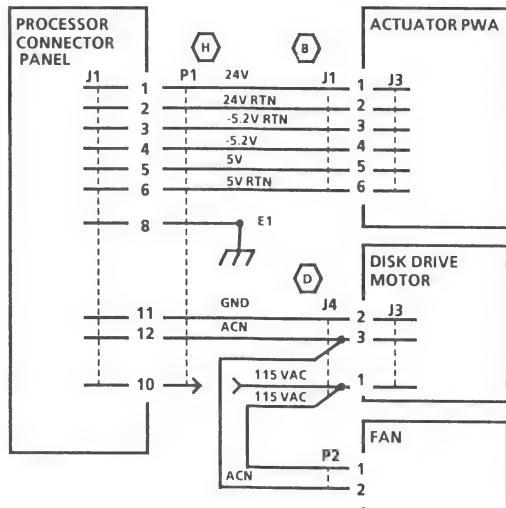
Figure 7-1 29MB Disk Console Plug/Jack Locations

PROCESSOR CONNECTOR PANEL

ACTUATOR PWA

	P1		J1	J3
J1 1	24V		1	
2	24V RTN		2	
3	-5.2V RTN		3	
4	-5.2V		4	
5	5V		5	
6	5V RTN		6	

8   E1

DISK DRIVE MOTOR

		J4	J3
11	GND	2	
12	ACN	3	
10 →	115 VAC	1	
	115 VAC		

FAN

P2
ACN   1
2

8010-038

Figure 7-2 29MB Power Cable - W20   7-3

CONTROL PWA — EDGE CONNECTOR / (S) (R) / **PROCESSOR CONNECTOR PANEL**

J1		J1 P1	J2
1	1		1
2	A		2
3	2		3
4	B		4
5	3		5
6	C		6
7	4		7
8	D		8
9	5		9
10	E		10
11	6		11
12	F		12
13	7		13
14	H		14
15	8		15
16	J		16
17	9		17
18	K		18
19	10		19
20	L		20
21	11		21
22	M		22
23	12		23
24	N		24
25	13		25

CONTROL PWA (Cont.) — EDGE CONNECTOR (Cont.) / (S) (R) / **PROCESSOR CONNECTOR PANEL (Cont.)**

| J1		J1 P1	J2
26	P		26
27	14		27
28	R		28
29	15		29
30	S		30
31	16		31
32	T		32
33	17		33
34	U		34
35	18		35
36	V		36
37	19		37
39	20		39
40	X		40
41	21		41
42	Y		42
43	22		43
44	Z		44
45	23		45
46	a		46
47	24		47
48	b		48
49	25		49
50	c		50
		E1	38

8010-039
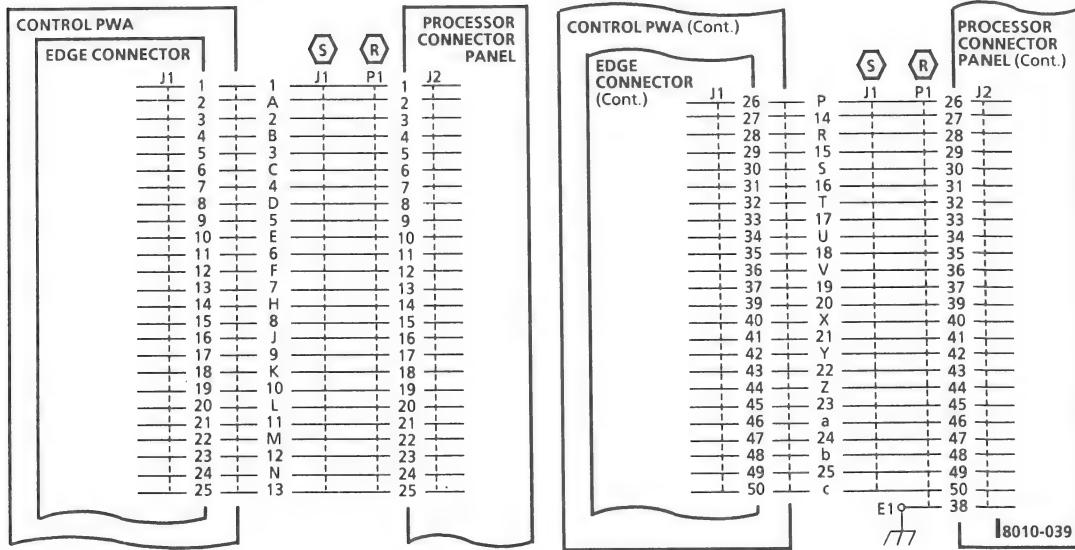
Figure 7-3 29MB Signal Cable - W21
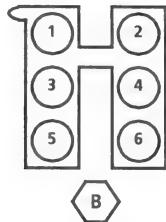
8010-040

Figure 7-4   Connector Type B

8010-041

8010-042

Figure 7-5   Connector Type D
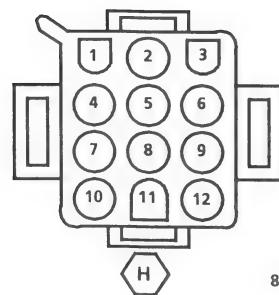
Figure 7-6   Connector Type H

7-5

8010-043

Figure 7-7   Connector Type R

8010-044
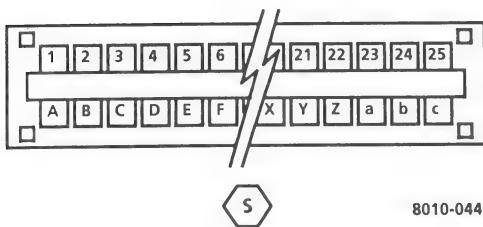
CHAPTER 8   PRINCIPLES OF OPERATION

29MB DISK CONOSLE SERVICE MANUAL

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8

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Detach Comment Sheet, and mail the card to the printed address on the reverse side.

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